

*Aggression vs. Selection: A Statistical Analysis of Offensive Approaches in Major*

*League Baseball*

**An Honors Thesis (HONR 499)**

**by**

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## Abstract

While the art of hitting a baseball is not a dichotomy, players are often categorized as aggressive or selective hitters, where aggressive hitters swing more often during trips to the plate and selective hitters swing less often. Analysts discuss the merits of each approach and whether one is superior to the other. The goal of this paper is to use various statistics to reach conclusions on the superiority of an aggressive or selective approach. Using tables of specific player data, mathematical tests can be used to identify and describe patterns, which may or may not advocate one of the two hitting approaches. After the final tests and results, there are notable patterns in the data for specific hitting statistics, as selective hitters slightly outperformed their aggressive counterparts, but no significant choice can be made either way.

## Acknowledgments

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### Process Analysis Statement

I have been interested in the art of hitting a baseball for quite some time, as I am an avid baseball fan, but the science and data behind offense cannot be viewed from one perspective and have conclusions easily drawn. Instead, multiple angles should be considered. The angle I lacked for quite some time was the statistical/mathematical view, which is odd, as I am a mathematics education major. At first, my instinct was to use a pseudo-statistical approach, without using statistical tests. With guidance from my advisor, we were able to shift the focus from speculation to hard data analysis, using justifiable mathematical tests and reasoning. The following analysis is the result of that adjustment. Using data from sources such as FanGraphs and the Official Major League Baseball site, *MLB.com*, I was able to gather data on many players and perform standard mathematical tests, yielding results that justified conclusions. These tests can be commonly seen in various statistics applications and courses, so it was a treat to utilize that knowledge in an authentic way.

## Aggression vs. Selection: A Statistical Analysis of Offensive Approaches in Major League Baseball

Baseball is unlike most sports around the world. It does share similarities with others such as cricket, but it channels an old-time feeling throughout the United States as well as other parts of the Western World. What is the root of these feelings? One might point to the afternoons of lazy summer Sundays, the thrill of autumn postseason play, the smell of popcorn, or the sound of a stadium electric organ playing. These aspects, however, are mere enhancements of the game itself. Many would argue that the complex, classic, and noble ballgame itself generates the positive feelings so many fans enjoy.

What part of the game of baseball is so impactful? In other words, how does this game separate itself from all the others? The answer is one simple word--longevity. Unlike football or basketball, players can be active (and successful) in baseball from their early twenties to their forties. Combine that with the number of games in a season (162), and the game seems more like a 162-mile marathon at a walking pace instead of a sprint! Due to this longevity, statistical evidence plays an increasingly large factor within the sport.

With this, there are many questions that can be answered using statistical evidence. Is the leadoff man producing enough to maintain his spot atop the order? He might have a low RBI count, but that is because his teammates have a low on-base percentage (OBP). Meanwhile, your leadoff man has an OBP of .332, which is not too shabby at all. Therefore, a reasonable fan would probably not be inclined to hurl insults at him at the next home game. This example is fictional, but it illustrates the nature of the sport.



Numbers do not lie, and baseball is a notorious “What have you done for me lately?” sport, meaning old talent and experience can make way for new blood if need be. Because of this, statistics are used to evaluate players constantly. Scouts view radar guns, calculate sabre-metrics (empirical analyses of baseball data), and other numerical tests to find the next great stars, rather than looking for “it factors”. Upon running the numbers, scouts and others study offensive categories in order to evaluate players.

Over time, a player might be defined as aggressive, meaning that when he steps to the plate, he may swing at more pitches, outside of the strike zone or not, and might swing for the fences more often than others. A player could also be described as non-aggressive or selective. These players might consistently take the first pitch (look at it and not swing) regardless of location, take a pitch in a 3-0 count, or have a lower swing percentage in general, which is a 46% league average (FanGraphs, 2017). What I’m itching to know is if hitters are rewarded for being aggressive more than selective. Essentially, which is the better approach, being aggressive or selective at the plate? Due to the statistical nature of baseball, we can find supporting evidence within baseball data to support the conclusion either way. That is the goal of this analysis.

We have a goal, how do we go about finding the answer? According to the Society for American Baseball Research, MLB.com is the preferred method for finding relevant baseball data/statistics. However, the leading carrier of plate discipline statistics is FanGraphs. Therefore, many of our statistics will come from this source. In order to narrow our data, how does one decide who is aggressive and who is not? There are a number of plate discipline statistics, which essentially describe the willingness of a particular player to swing, not swing, swing and miss, make contact, etc. Swing

percentage is the average number of swings a batter takes overall (swings / pitches).

While there are more specific swing percentage statistics, overall swing percentage will be our target area for determining aggression and non-aggression. The higher the swing percentage, the greater the aggression, and lower swing percentage indicates selectiveness. The top fifty highest and fifty lowest swing percentages for the 2016 season are identified using FanGraphs.com, and those one hundred players will be the subjects of analysis of production stats.

If each player is examined for their offensive productivity, we might be able to reach some more accurate conclusions. Before that, however, it might be important to explain some of the key statistics that are integral to the game of baseball. These include batting AB, R, H, AVG, SB, RBI, HR, OBP, SLG, and OPS. At-bats (AB) are the number of times a batter comes to the plate, which does not result in a walk or hit-by-pitch. Runs (R) are the total number of times a player scores by safely crossing home plate. Hits (H) are the number of times a player gets on base (not by walk, HBP, or error). Batting average (AVG) is the number of hits divided by their number of at-bats. Stolen bases (SB), while being a base running statistic, is the total number of stolen bases which is a widely studied offensive category. Runs batted in (RBI) are when a hitter is credited with driving in a run for their team in many different ways, such as a homerun or based-loaded walk. Homeruns (HR) are as they sound, and include inside-the-park homeruns. On base percentage (OBP) includes the number of times a player reaches base divided by their number of plate appearances (at-bats + walks + hit by pitches). Slugging percentage (SLG) is the amount of total bases earned divided by at-bats, and is a common test for

power numbers. On base plus slugging (OPS) is  $OBP + SLG$ , which reflects a player's ability to get on base and hit for power.

Each of the preceding statistics was tallied for the 2016 season and career for each of the 100 players, which fall under the aforementioned aggressive/passive categories.

Those full statistics boards are shown in *Charts 1-4*. There are crucial questions that need answering: does increased/decreased swing percentage show a statistically significant correlation for any particular statistic? If so, which hitting approach appears superior? In order to answer these questions, we employ two calculations/tests, which may give more insight than viewing raw data. The first, correlation coefficients, displays relationships between groups of data. The second, hypothesis testing, uses descriptive statistics and probability to make educated guesses about targeted data.

Let's first address correlation coefficients. In statistics, correlation coefficients are used to determine how strong a particular relationship between two variables is. In this case, each of the fifty players' individual statistics can be compared with their swing percentages, and using Excel, each stat (e.g. H, RBI, OBP) can be correlated with the swing percentages of that particular player group (e.g. 2016 Aggressive Hitters). Each of those correlation coefficients is displayed at the bottoms of *Charts 1-4*. In order to show some significance, the absolute value of the coefficient should approach 1. The closer a value is to 0, the less correlated the data is. Be careful however, as these are not comparing between player groups (e.g. 2016 Aggressive Hitters vs. 2016 Selective Hitters). Rather, they use the swing percentages within each player group to establish correlations with their own stats. Upon closer inspection, there are certain stats with greater correlations: OBP and R/AB. Within Aggressive Hitters, OBP's coefficient is the



greatest in the group, for both 2016 and Career at  $-.256$  and  $-.199$ , respectively. In the 2016 Selective Hitters, both OBP and R/AB stand out at  $-.251$  and  $-.240$ , respectively. In the Career Selective Hitters, the OBP and R/AB coefficients are  $-.406$  and  $-.427$ , respectively, with R, H, SB, and OPS also standing out. However, in any case, none of these correlations are particularly strong.

What does this mean? Since each of these values is negative, the correlations are also negative, meaning as one variable increases, the other decreases, generally speaking. It would imply, then, that as swing percentage increased, OBP, R/AB, etc. would decrease. This would advocate a less aggressive approach, but simply viewing one test cannot draw conclusions. It is also worth noting, that for **all** MLB players (*Charts 5-13*) with minimum 100 plate appearances (to sort out players with little playing time), three statistics, AVG, OBP, and R/AB, have noteworthy (but not significant) correlation coefficients of  $.115$ ,  $-.327$ , and  $-.194$  (bottom of *Chart 13*). This alone would indicate that selectiveness is slightly beneficial toward OBP and R/AB as well, while AVG correlates positively with more aggressive hitting, but this is not necessarily the case. The coefficients are just not significant enough to warrant those conclusions. There is another test performed that sheds light on this pursuit.

Hypothesis testing is another statistical method used to make predictions and/or conclusions about data. What we would like to know is whether, on average, an aggressive player is statistically more or less likely to produce offensively than his selective counterpart. In this set of tests, there will be comparisons between player groups (e.g. 2016 Aggressive vs. 2016 Selective Hitters), rather than within a single group or across all players. One specific form of hypothesis test is difference of means. Part of



hypothesis testing is (as the name implies) creating hypotheses and determining if they should be rejected. Our initial or null hypothesis will be that the population means for aggressive and selective hitters will be equal. By doing this, it essentially states that aggression or selection is not superior to the other. The alternative hypothesis is the conclusion reached if the null hypothesis is rejected; in this case, that the population means for aggressive and selective hitters are likely *not* equal, essentially stating that either aggression or selection is superior to the other for a particular hitting statistic. Our population for the test will be the top fifty aggressive and selective players in a given year, while our sample of the population is the top fifty aggressive and top fifty selective hitters for the year 2016. The hypothesis test uses the formula,

$$z = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}}$$

where  $\bar{x}_1$  and  $\bar{x}_2$  are the sample means of a particular statistic for two player groups,  $s_1$  and  $s_2$  are the standard deviations of the same statistic for the same two player groups, and  $n_1$  and  $n_2$  are the number of players in each group (both fifty). In each calculation, aggressive hitters were labeled as subscript 1's and selective hitters were labeled as subscript 2's. Therefore, if a z value is positive, then it indicates a greater mean for aggressive hitters, while a negative value indicates a greater mean for selective hitters. Using Excel, the means and standard deviations for each statistic and player group were calculated, recorded, and displayed in *Chart 14* (top). Each of those can be used to generate z values for every statistic for either 2016 or career comparisons. For example, the z value for 2016 hits (H), displayed as 1.50894459 (*see Chart 14*), comes from using the sample means, standard deviations, and fifty players from both the 2016 Aggressive

Hits column and the 2016 Selective Hits columns (see *Charts 1 and 3*). These were performed for all stats and 2016/career for a total of twenty-four z values (*Chart 14*). Using each of these, p values can be generated, which will identify if the null hypothesis should be rejected in favor of the alternative hypothesis or not. These p values can be found with either a common table of values or an online calculator. Each p value displays the likelihood of statistical evidence refuting the null hypothesis. If the p value is less than a chosen value (in this case,  $p < .05$ , a common value), then the data would be statistically significant enough to conclude that the null hypothesis could be rejected, meaning that the population means are likely not equal, perhaps allowing one to conclude that one hitting approach is superior to the other for a particular statistic.

*Chart 14* displays the p value results along with a column to the right, stating, “yes” if the associated p value is less than .05. Despite most statistics failing to reject the null hypothesis, there are a total of six “yes” cells, which are associated with OBP, R, and R/AB for both 2016 and career stats. This states that the population means are most likely higher for either the aggressive or selective hitters for OBP, R, and R/AB. Since the associated z values in each case are negative, the means are higher for selective hitters in each stat, since selective hitters were chosen as group 2 (subscript 2’s). This would align with conventional baseball wisdom, as patient hitters rewarded with higher OBP. If a player posts a higher OBP, he is on base more often (as per the definition of OBP), meaning he scores more runs (R). Overall, the p values describe a noticeable increase in average OBP, R, and R/AB for the group of selective hitters, with no other differences or advantages for aggressive hitters. The differences in OBP, R, and R/AB can be visualized using the plots of data, comparing swing percentage to OBP, R, and R/AB (see *Figures*

1-6). In each of the graphs, there appears to be a slight edge for the selective hitters in each category, in varying degrees. Where does this slight edge come from? Walks would make sense, as a selective hitter is more patient, drawing more of them. AVG is statistically about the same during the previous tests, yet OBP is higher for selective hitters. This must result from walks, unless these hitters are being pelted by hit-by-pitches (HBP) at an astronomical rate.

Does this prove that selective hitters are superior (albeit slightly)? Not exactly, as for the great majority of statistics analyzed, the production is statistically similar between aggressive and selective hitters. Player individuality also plays a role in offensive production, meaning a player's aggressiveness is tied to who he is, and altering this quality could damage his capability as a player. Strangely though, the MLB seems to be increasing its aggressiveness. MLB.com reports that the league overall pitch take (not swinging) percentage of 2015 was the lowest since 2008 at 52.9 percent. Additionally, the rise of league-wide swing percentage was the largest one-year jump on record from 46.7 to 47.4 percent (Castrovince, 2016). According to Anthony Castrovince, "What it boils down to is this: Hitters are swinging earlier and more often" (2016). Despite this trend, there are players who would not benefit from that approach. Castrovince acknowledges his case, stating,

It would be silly to suggest a more aggressive approach would or could work for everybody. Joey Votto would not be Joey Votto if he didn't have the almost superhuman tunnel vision that allows him to discern balls from strikes and routinely grind out long at-bats. It works for him. (2016)



Votto, one of the fifty selective players chosen, is valuable *because* of his selective eye at the plate, so changing his offense would only hinder his ability. While the league is becoming more aggressive, there is value in selectivity given its merits for certain players.

There is an example, however, of an aggressive hitter who altered his approach mid-season, with mixed results. Adam Duvall of the Cincinnati Reds wowed spectators during the first half of the 2016 season, hitting for a .258 average and clobbering eighteen homeruns. His numbers propelled him to a well-earned 2016 All-Star Game selection. The odd part is, that he was only receiving walks 3.2 percent of the time through fifty-nine games (Pace, 2016). Over time, he managed to raise his walk percentage to 6.7 overall, but that cost him his slugging percentage, decreasing from .589 to .434 (Pace, 2016). While his new approach did help improve his plate discipline, his production slipped, which is essentially the overall goal. His case demonstrates that the aggressive approach would be more beneficial to him, whereas Joey Votto's beneficial approach is his selectiveness.

In summation, this analysis merely outlines the current state of baseball today; while there might be differences in production between selective and aggressive hitters, their approaches are correct and appropriate for each individual, because they would not be the same players without them. Adjustments can be made here and there, but the player's offensive identity is what got him to the big leagues. It is worth noting, however, that in the previous mathematical tests conducted, selectivity was observed to hold merit. There was a small relationship between decreased swing percentage and increased production for some statistics, and the selective group on average outperformed the

aggressive group in certain statistics as well. The weak correlation coefficients and subtle differences in means led to this perceived merit, despite undeniable proof. For those in the baseball community who sought a definitive answer in this analysis, they will be slightly disappointed. In all honesty, if there were a definitive answer, it would have been found by now. At the very least, this analysis proves that baseball is still a quantitative game and a qualitative game, which keeps the purist baseball old-timers and sabre-metric gurus alike smiling. America's past time has a little something for everyone.

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## Chart 1

## Aggressive Hitters 2016 Stats

|                    | AB  | R   | H   | HR  | RBI | SB | AVG   | OBP   | SLG   | OPS   | Swing % | RBI/AB | HR/AB | R/AB  |       |
|--------------------|-----|-----|-----|-----|-----|----|-------|-------|-------|-------|---------|--------|-------|-------|-------|
| Adam Jones         | 619 | 86  | 164 | 164 | 29  | 83 | 2     | 0.265 | 0.31  | 0.436 | 0.746   | 60.60% | 0.134 | 0.047 | 0.139 |
| Jonathan Schoop    | 615 | 82  | 164 | 164 | 25  | 82 | 1     | 0.267 | 0.298 | 0.454 | 0.752   | 60.20% | 0.133 | 0.041 | 0.133 |
| Yasmany Tomas      | 530 | 72  | 144 | 144 | 31  | 83 | 2     | 0.272 | 0.313 | 0.507 | 0.82    | 58.00% | 0.157 | 0.058 | 0.136 |
| Brandon Phillips   | 550 | 74  | 160 | 11  | 64  | 14 | 0.291 | 0.32  | 0.416 | 0.736 | 57.80%  | 0.116  | 0.020 | 0.135 |       |
| Corey Dickerson    | 510 | 57  | 125 | 24  | 70  | 0  | 0.245 | 0.293 | 0.468 | 0.761 | 56.40%  | 0.137  | 0.047 | 0.112 |       |
| Matt Kemp          | 623 | 89  | 167 | 35  | 108 | 1  | 0.268 | 0.304 | 0.499 | 0.803 | 55.40%  | 0.173  | 0.056 | 0.143 |       |
| Didi Gregorius     | 562 | 68  | 155 | 20  | 70  | 7  | 0.276 | 0.304 | 0.447 | 0.751 | 55.40%  | 0.125  | 0.036 | 0.121 |       |
| Salvador Perez     | 514 | 57  | 127 | 22  | 64  | 0  | 0.247 | 0.288 | 0.437 | 0.725 | 55.20%  | 0.125  | 0.043 | 0.111 |       |
| Rougned Odor       | 605 | 89  | 164 | 33  | 88  | 14 | 0.271 | 0.296 | 0.502 | 0.798 | 54.30%  | 0.145  | 0.055 | 0.147 |       |
| Josh Harrison      | 487 | 57  | 138 | 4   | 59  | 19 | 0.283 | 0.311 | 0.388 | 0.699 | 54.30%  | 0.121  | 0.008 | 0.117 |       |
| Starling Marte     | 489 | 71  | 152 | 9   | 46  | 47 | 0.311 | 0.362 | 0.456 | 0.818 | 54.10%  | 0.094  | 0.018 | 0.145 |       |
| Yadier Molina      | 534 | 56  | 164 | 8   | 58  | 3  | 0.307 | 0.36  | 0.427 | 0.787 | 53.40%  | 0.109  | 0.015 | 0.105 |       |
| Eduardo Nunez      | 553 | 73  | 159 | 16  | 67  | 40 | 0.288 | 0.325 | 0.433 | 0.758 | 53.00%  | 0.121  | 0.029 | 0.132 |       |
| Corey Seager       | 627 | 105 | 193 | 26  | 72  | 3  | 0.308 | 0.365 | 0.512 | 0.877 | 52.90%  | 0.115  | 0.041 | 0.167 |       |
| Alcides Escobar    | 637 | 57  | 166 | 7   | 55  | 17 | 0.261 | 0.292 | 0.35  | 0.642 | 52.90%  | 0.086  | 0.011 | 0.089 |       |
| Adonis Garcia      | 532 | 65  | 145 | 14  | 65  | 3  | 0.273 | 0.311 | 0.406 | 0.717 | 52.80%  | 0.122  | 0.026 | 0.122 |       |
| Freddy Galvis      | 584 | 61  | 141 | 20  | 67  | 17 | 0.241 | 0.274 | 0.399 | 0.673 | 52.70%  | 0.115  | 0.034 | 0.104 |       |
| Freddie Freeman    | 589 | 102 | 178 | 34  | 91  | 6  | 0.302 | 0.4   | 0.568 | 0.968 | 52.60%  | 0.154  | 0.058 | 0.173 |       |
| J.D. Martinez      | 460 | 69  | 141 | 22  | 68  | 1  | 0.307 | 0.373 | 0.535 | 0.908 | 52.50%  | 0.148  | 0.048 | 0.150 |       |
| Stephen Piscotty   | 582 | 86  | 159 | 22  | 85  | 7  | 0.273 | 0.343 | 0.457 | 0.8   | 52.30%  | 0.146  | 0.038 | 0.148 |       |
| Maikel Franco      | 581 | 67  | 148 | 25  | 88  | 1  | 0.255 | 0.306 | 0.427 | 0.733 | 52.10%  | 0.151  | 0.043 | 0.115 |       |
| Khris Davis        | 555 | 85  | 137 | 42  | 102 | 1  | 0.247 | 0.307 | 0.524 | 0.831 | 52.00%  | 0.184  | 0.076 | 0.153 |       |
| Ryan Braun         | 511 | 80  | 156 | 30  | 91  | 16 | 0.305 | 0.365 | 0.538 | 0.903 | 51.80%  | 0.178  | 0.059 | 0.157 |       |
| Jay Bruce          | 539 | 74  | 135 | 33  | 99  | 4  | 0.25  | 0.309 | 0.506 | 0.815 | 51.80%  | 0.184  | 0.061 | 0.137 |       |
| Starlin Castro     | 577 | 63  | 156 | 21  | 70  | 4  | 0.27  | 0.3   | 0.434 | 0.734 | 51.70%  | 0.121  | 0.036 | 0.109 |       |
| Carlos Gonzalez    | 584 | 87  | 174 | 25  | 100 | 2  | 0.298 | 0.35  | 0.505 | 0.855 | 51.60%  | 0.171  | 0.043 | 0.149 |       |
| Jose Abreu         | 624 | 67  | 183 | 25  | 100 | 0  | 0.293 | 0.353 | 0.467 | 0.82  | 51.60%  | 0.160  | 0.040 | 0.107 |       |
| Robinson Cano      | 655 | 107 | 195 | 39  | 103 | 0  | 0.298 | 0.35  | 0.532 | 0.882 | 51.40%  | 0.157  | 0.060 | 0.163 |       |
| Brandon Crawford   | 553 | 67  | 152 | 12  | 84  | 7  | 0.275 | 0.342 | 0.43  | 0.772 | 51.40%  | 0.152  | 0.022 | 0.121 |       |
| Scooter Gennett    | 498 | 58  | 131 | 14  | 56  | 8  | 0.263 | 0.317 | 0.411 | 0.728 | 50.50%  | 0.112  | 0.028 | 0.116 |       |
| Asdrubal Cabrera   | 521 | 65  | 146 | 23  | 62  | 5  | 0.28  | 0.336 | 0.474 | 0.81  | 50.50%  | 0.119  | 0.044 | 0.125 |       |
| Wilson Ramos       | 482 | 58  | 148 | 22  | 80  | 0  | 0.307 | 0.354 | 0.496 | 0.85  | 50.30%  | 0.166  | 0.046 | 0.120 |       |
| Adeiny Hechavarria | 508 | 52  | 120 | 3   | 38  | 1  | 0.236 | 0.283 | 0.311 | 0.594 | 50.20%  | 0.075  | 0.006 | 0.102 |       |
| Addison Russell    | 525 | 67  | 125 | 21  | 95  | 5  | 0.238 | 0.321 | 0.417 | 0.738 | 50.10%  | 0.181  | 0.040 | 0.128 |       |
| Melvin Upton Jr.   | 492 | 64  | 117 | 20  | 61  | 27 | 0.238 | 0.291 | 0.402 | 0.693 | 50.10%  | 0.124  | 0.041 | 0.130 |       |
| Adam Duvall        | 552 | 85  | 133 | 33  | 103 | 6  | 0.241 | 0.297 | 0.498 | 0.795 | 49.80%  | 0.187  | 0.060 | 0.154 |       |
| Manny Machado      | 640 | 105 | 188 | 37  | 96  | 0  | 0.294 | 0.343 | 0.533 | 0.876 | 49.70%  | 0.150  | 0.058 | 0.164 |       |
| Miguel Cabrera     | 595 | 92  | 188 | 38  | 108 | 0  | 0.316 | 0.393 | 0.563 | 0.956 | 49.50%  | 0.182  | 0.064 | 0.155 |       |
| Kole Calhoun       | 594 | 91  | 161 | 18  | 75  | 2  | 0.271 | 0.348 | 0.438 | 0.786 | 49.50%  | 0.126  | 0.030 | 0.153 |       |
| Mark Trumbo        | 613 | 94  | 157 | 47  | 108 | 2  | 0.256 | 0.316 | 0.534 | 0.85  | 49.40%  | 0.176  | 0.077 | 0.153 |       |
| Cheslor Cuthbert   | 475 | 49  | 130 | 12  | 46  | 2  | 0.274 | 0.318 | 0.413 | 0.731 | 49.20%  | 0.097  | 0.025 | 0.103 |       |
| Leonys Martin      | 518 | 72  | 128 | 15  | 47  | 24 | 0.247 | 0.306 | 0.378 | 0.684 | 49.20%  | 0.091  | 0.029 | 0.139 |       |
| Adrian Beltre      | 583 | 89  | 175 | 32  | 104 | 1  | 0.3   | 0.358 | 0.521 | 0.879 | 49.20%  | 0.178  | 0.055 | 0.153 |       |
| Jose Altuve        | 640 | 108 | 216 | 24  | 96  | 30 | 0.338 | 0.396 | 0.532 | 0.928 | 49.10%  | 0.150  | 0.038 | 0.169 |       |
| Brad Miller        | 548 | 73  | 133 | 30  | 81  | 6  | 0.243 | 0.304 | 0.482 | 0.786 | 49.10%  | 0.148  | 0.055 | 0.133 |       |
| Melky Cabrera      | 591 | 70  | 175 | 14  | 86  | 2  | 0.296 | 0.345 | 0.455 | 0.8   | 49.10%  | 0.146  | 0.024 | 0.118 |       |
| Kevin Pillar       | 548 | 59  | 146 | 7   | 53  | 14 | 0.266 | 0.303 | 0.376 | 0.679 | 48.90%  | 0.097  | 0.013 | 0.108 |       |
| Mitch Moreland     | 460 | 49  | 107 | 22  | 60  | 1  | 0.233 | 0.298 | 0.422 | 0.72  | 48.90%  | 0.130  | 0.048 | 0.107 |       |
| Evan Longoria      | 633 | 81  | 173 | 36  | 98  | 0  | 0.273 | 0.318 | 0.522 | 0.84  | 48.80%  | 0.155  | 0.057 | 0.128 |       |
| Kris Bryant        | 603 | 121 | 176 | 39  | 102 | 8  | 0.292 | 0.385 | 0.554 | 0.939 | 48.80%  | 0.169  | 0.065 | 0.201 |       |

Correlations:

-0.0739654 0.00511273 -0.0750468 -0.1052526 0.00896183 -0.0163447 -0.2562624

-0.1680962

1 -0.1326526 -0.0858735 -0.1085117

| AB | R | H | HR | RBI | SB | AVG | OBP | OPS | Swing % | RBI/AB | HR/AB | R/AB |
|----|---|---|----|-----|----|-----|-----|-----|---------|--------|-------|------|
|----|---|---|----|-----|----|-----|-----|-----|---------|--------|-------|------|

Chart 2

## Aggressive Hitters Career Stats

|                    | AB    | R    | H    | HR  | RBI  | SB  | AVG   | OBP   | SLG   | OPS   | Swing % | RBI/AB | HR/AB | R/AB  |
|--------------------|-------|------|------|-----|------|-----|-------|-------|-------|-------|---------|--------|-------|-------|
| Adam Jones         | 5347  | 761  | 1480 | 225 | 742  | 86  | 0.277 | 0.318 | 0.459 | 0.777 | 60.60%  | 0.139  | 0.042 | 0.142 |
| Jonathan Schoop    | 1389  | 169  | 348  | 57  | 167  | 5   | 0.251 | 0.283 | 0.427 | 0.71  | 60.20%  | 0.120  | 0.041 | 0.122 |
| Yasmany Tomas      | 936   | 112  | 255  | 40  | 131  | 7   | 0.272 | 0.309 | 0.462 | 0.771 | 58.00%  | 0.140  | 0.043 | 0.120 |
| Brandon Phillips   | 6783  | 920  | 1863 | 197 | 889  | 198 | 0.275 | 0.32  | 0.421 | 0.741 | 57.80%  | 0.131  | 0.029 | 0.136 |
| Corey Dickerson    | 1364  | 193  | 380  | 63  | 194  | 10  | 0.279 | 0.326 | 0.509 | 0.835 | 56.40%  | 0.142  | 0.046 | 0.141 |
| Matt Kemp          | 5288  | 819  | 1513 | 240 | 856  | 183 | 0.286 | 0.34  | 0.49  | 0.83  | 55.40%  | 0.162  | 0.045 | 0.155 |
| Didi Gregorius     | 1734  | 208  | 451  | 42  | 183  | 15  | 0.26  | 0.312 | 0.393 | 0.705 | 55.40%  | 0.106  | 0.024 | 0.120 |
| Salvador Perez     | 2556  | 272  | 696  | 87  | 343  | 2   | 0.272 | 0.302 | 0.432 | 0.734 | 55.20%  | 0.134  | 0.034 | 0.106 |
| Rougned Odor       | 1417  | 182  | 375  | 58  | 197  | 24  | 0.265 | 0.302 | 0.464 | 0.766 | 54.30%  | 0.139  | 0.041 | 0.128 |
| Josh Harrison      | 1957  | 256  | 555  | 28  | 185  | 60  | 0.284 | 0.316 | 0.41  | 0.726 | 54.30%  | 0.095  | 0.014 | 0.131 |
| Starling Marte     | 2240  | 329  | 648  | 58  | 235  | 160 | 0.289 | 0.345 | 0.447 | 0.792 | 54.10%  | 0.105  | 0.026 | 0.147 |
| Yadier Molina      | 5591  | 541  | 1593 | 108 | 703  | 47  | 0.285 | 0.338 | 0.4   | 0.738 | 53.40%  | 0.126  | 0.019 | 0.097 |
| Eduardo Nunez      | 1697  | 224  | 464  | 34  | 187  | 105 | 0.273 | 0.314 | 0.402 | 0.716 | 53.00%  | 0.110  | 0.020 | 0.132 |
| Corey Seager       | 725   | 122  | 226  | 30  | 89   | 5   | 0.312 | 0.374 | 0.518 | 0.892 | 52.90%  | 0.123  | 0.041 | 0.168 |
| Alcides Escobar    | 4223  | 480  | 1105 | 31  | 354  | 162 | 0.262 | 0.297 | 0.345 | 0.642 | 52.90%  | 0.084  | 0.007 | 0.114 |
| Adonis Garcia      | 723   | 85   | 198  | 24  | 91   | 3   | 0.274 | 0.307 | 0.43  | 0.737 | 52.80%  | 0.126  | 0.033 | 0.118 |
| Freddy Galvis      | 1657  | 165  | 400  | 40  | 172  | 29  | 0.241 | 0.279 | 0.369 | 0.648 | 52.70%  | 0.104  | 0.024 | 0.100 |
| Freddie Freeman    | 3298  | 507  | 949  | 138 | 515  | 19  | 0.288 | 0.373 | 0.484 | 0.857 | 52.60%  | 0.156  | 0.042 | 0.154 |
| J.D. Martinez      | 460   | 69   | 141  | 22  | 68   | 1   | 0.307 | 0.373 | 0.535 | 0.908 | 52.50%  | 0.148  | 0.048 | 0.150 |
| Stephen Piscotty   | 815   | 115  | 230  | 29  | 124  | 9   | 0.282 | 0.348 | 0.467 | 0.815 | 52.30%  | 0.152  | 0.036 | 0.141 |
| Maikel Franco      | 941   | 117  | 243  | 39  | 143  | 2   | 0.258 | 0.312 | 0.437 | 0.749 | 52.10%  | 0.152  | 0.041 | 0.124 |
| Khris Davis        | 1584  | 236  | 394  | 102 | 264  | 14  | 0.249 | 0.312 | 0.505 | 0.817 | 52.00%  | 0.167  | 0.064 | 0.149 |
| Ryan Braun         | 5249  | 879  | 1597 | 285 | 937  | 181 | 0.304 | 0.367 | 0.543 | 0.91  | 51.80%  | 0.179  | 0.054 | 0.167 |
| Jay Bruce          | 4650  | 669  | 1153 | 241 | 737  | 61  | 0.248 | 0.318 | 0.467 | 0.785 | 51.80%  | 0.158  | 0.052 | 0.144 |
| Starlin Castro     | 4101  | 454  | 1147 | 83  | 433  | 79  | 0.28  | 0.318 | 0.408 | 0.726 | 51.70%  | 0.106  | 0.020 | 0.111 |
| Carlos Gonzalez    | 3955  | 657  | 1152 | 201 | 654  | 114 | 0.291 | 0.347 | 0.521 | 0.868 | 51.60%  | 0.165  | 0.051 | 0.166 |
| Jose Abreu         | 1793  | 235  | 537  | 91  | 308  | 3   | 0.299 | 0.36  | 0.515 | 0.875 | 51.60%  | 0.172  | 0.051 | 0.131 |
| Robinson Cano      | 7210  | 1065 | 2210 | 278 | 1086 | 50  | 0.307 | 0.355 | 0.498 | 0.853 | 51.40%  | 0.151  | 0.039 | 0.148 |
| Brandon Crawford   | 2681  | 304  | 675  | 59  | 346  | 21  | 0.252 | 0.319 | 0.393 | 0.712 | 51.40%  | 0.129  | 0.022 | 0.113 |
| Scooter Gennett    | 1526  | 184  | 426  | 35  | 160  | 17  | 0.279 | 0.318 | 0.42  | 0.738 | 50.50%  | 0.105  | 0.023 | 0.121 |
| Asdrubal Cabrera   | 4661  | 626  | 1253 | 125 | 571  | 83  | 0.269 | 0.329 | 0.419 | 0.748 | 50.50%  | 0.123  | 0.027 | 0.134 |
| Wilson Ramos       | 2136  | 224  | 574  | 83  | 321  | 0   | 0.269 | 0.313 | 0.429 | 0.742 | 50.30%  | 0.150  | 0.039 | 0.105 |
| Adeiny Hechavarria | 2183  | 199  | 555  | 14  | 177  | 26  | 0.254 | 0.292 | 0.335 | 0.627 | 50.20%  | 0.081  | 0.006 | 0.091 |
| Addison Russell    | 1000  | 127  | 240  | 34  | 149  | 9   | 0.24  | 0.314 | 0.404 | 0.718 | 50.10%  | 0.149  | 0.034 | 0.127 |
| Melvin Upton Jr.   | 5175  | 723  | 1260 | 164 | 586  | 300 | 0.243 | 0.321 | 0.402 | 0.723 | 50.10%  | 0.113  | 0.032 | 0.140 |
| Adam Duvall        | 689   | 99   | 161  | 41  | 117  | 6   | 0.234 | 0.291 | 0.48  | 0.771 | 49.80%  | 0.170  | 0.060 | 0.144 |
| Manny Machado      | 2458  | 357  | 699  | 105 | 311  | 30  | 0.284 | 0.333 | 0.478 | 0.811 | 49.70%  | 0.127  | 0.043 | 0.145 |
| Miguel Cabrera     | 7853  | 1321 | 2519 | 446 | 1553 | 38  | 0.321 | 0.399 | 0.562 | 0.961 | 49.50%  | 0.198  | 0.057 | 0.168 |
| Kole Calhoun       | 1935  | 290  | 515  | 69  | 249  | 14  | 0.266 | 0.328 | 0.436 | 0.764 | 49.50%  | 0.129  | 0.036 | 0.150 |
| Mark Trumbo        | 3167  | 411  | 796  | 178 | 517  | 22  | 0.251 | 0.303 | 0.473 | 0.776 | 49.40%  | 0.163  | 0.056 | 0.130 |
| Cheslor Cuthbert   | 521   | 55   | 140  | 13  | 54   | 2   | 0.269 | 0.315 | 0.409 | 0.724 | 49.20%  | 0.104  | 0.025 | 0.106 |
| Leonys Martin      | 1850  | 240  | 467  | 35  | 167  | 108 | 0.252 | 0.305 | 0.366 | 0.671 | 49.20%  | 0.090  | 0.019 | 0.130 |
| Adrian Beltre      | 10295 | 1428 | 2942 | 445 | 1571 | 119 | 0.286 | 0.338 | 0.48  | 0.818 | 49.20%  | 0.153  | 0.043 | 0.139 |
| Jose Altuve        | 3361  | 449  | 1046 | 60  | 322  | 199 | 0.311 | 0.354 | 0.436 | 0.79  | 49.10%  | 0.096  | 0.018 | 0.134 |
| Brad Miller        | 1659  | 205  | 408  | 59  | 199  | 28  | 0.246 | 0.31  | 0.423 | 0.733 | 49.10%  | 0.120  | 0.036 | 0.124 |
| Melky Cabrera      | 5630  | 746  | 1609 | 114 | 683  | 97  | 0.286 | 0.337 | 0.417 | 0.754 | 49.10%  | 0.121  | 0.020 | 0.133 |
| Kevin Pillar       | 1352  | 165  | 361  | 24  | 129  | 40  | 0.267 | 0.303 | 0.385 | 0.688 | 48.90%  | 0.095  | 0.018 | 0.122 |
| Mitch Moreland     | 2496  | 299  | 633  | 110 | 354  | 8   | 0.254 | 0.315 | 0.439 | 0.754 | 48.90%  | 0.142  | 0.044 | 0.120 |
| Evan Longoria      | 4837  | 709  | 1311 | 241 | 806  | 45  | 0.271 | 0.344 | 0.49  | 0.834 | 48.80%  | 0.167  | 0.050 | 0.147 |
| Kris Bryant        | 1162  | 208  | 330  | 65  | 201  | 21  | 0.284 | 0.377 | 0.523 | 0.9   | 48.80%  | 0.173  | 0.056 | 0.179 |

-0.0533174 -0.0441615 -0.0666169 -0.0642286 0.03136137 0.04281564 -0.1988683 -0.0624039 1 -0.0563485 0.00057664 -0.0699999

AB R H HR RBI SB AVG OBP OPS Swing % RBI/AB HR/AB R/AB



Chart 3

## Selective Hitters 2016 Stats

|                   | AB  | R   | H   | HR  | RBI | SB | AVG   | OBP   | SLG   | OPS   | Swing % | RBI/AB | HR/AB | R/AB  |       |
|-------------------|-----|-----|-----|-----|-----|----|-------|-------|-------|-------|---------|--------|-------|-------|-------|
| Ben Zobrist       | 523 | 94  | 142 | 142 | 18  | 76 | 6     | 0.272 | 0.386 | 0.445 | 0.831   | 35.50% | 0.145 | 0.034 | 0.180 |
| Joe Mauer         | 494 | 68  | 129 | 11  | 49  | 2  | 0.261 | 0.363 | 0.389 | 0.752 | 35.80%  | 0.099  | 0.022 | 0.138 |       |
| Curtis Granderson | 545 | 88  | 129 | 30  | 59  | 4  | 0.237 | 0.335 | 0.464 | 0.799 | 36.60%  | 0.108  | 0.055 | 0.161 |       |
| Jose Bautista     | 423 | 68  | 99  | 22  | 69  | 2  | 0.234 | 0.366 | 0.451 | 0.817 | 36.60%  | 0.163  | 0.052 | 0.161 |       |
| Brett Gardner     | 547 | 80  | 143 | 7   | 41  | 16 | 0.261 | 0.351 | 0.362 | 0.713 | 36.80%  | 0.075  | 0.013 | 0.146 |       |
| Jayson Werth      | 525 | 84  | 128 | 21  | 69  | 5  | 0.244 | 0.335 | 0.417 | 0.752 | 38.20%  | 0.131  | 0.040 | 0.160 |       |
| Matt Carpenter    | 473 | 81  | 128 | 21  | 68  | 0  | 0.271 | 0.38  | 0.505 | 0.885 | 38.60%  | 0.144  | 0.044 | 0.171 |       |
| Mike Trout        | 549 | 123 | 173 | 29  | 100 | 30 | 0.315 | 0.441 | 0.55  | 0.991 | 38.80%  | 0.182  | 0.053 | 0.224 |       |
| Russell Martin    | 455 | 62  | 105 | 20  | 74  | 2  | 0.231 | 0.335 | 0.398 | 0.733 | 38.90%  | 0.163  | 0.044 | 0.136 |       |
| Dexter Fowler     | 456 | 84  | 126 | 13  | 48  | 13 | 0.276 | 0.393 | 0.447 | 0.84  | 39.00%  | 0.105  | 0.029 | 0.184 |       |
| Paul Goldschmidt  | 579 | 106 | 172 | 24  | 95  | 32 | 0.297 | 0.411 | 0.488 | 0.899 | 39.10%  | 0.164  | 0.041 | 0.183 |       |
| Carlos Santana    | 582 | 89  | 151 | 34  | 87  | 5  | 0.259 | 0.366 | 0.499 | 0.865 | 39.10%  | 0.149  | 0.058 | 0.153 |       |
| Logan Forsythe    | 511 | 76  | 135 | 20  | 52  | 6  | 0.264 | 0.333 | 0.445 | 0.778 | 39.60%  | 0.102  | 0.039 | 0.149 |       |
| Martin Prado      | 600 | 70  | 183 | 8   | 75  | 2  | 0.305 | 0.359 | 0.416 | 0.775 | 39.80%  | 0.125  | 0.013 | 0.117 |       |
| Chase Utley       | 512 | 79  | 129 | 14  | 52  | 2  | 0.252 | 0.319 | 0.397 | 0.716 | 40.20%  | 0.102  | 0.027 | 0.154 |       |
| Christian Yelich  | 578 | 78  | 172 | 21  | 98  | 9  | 0.298 | 0.376 | 0.483 | 0.859 | 40.50%  | 0.170  | 0.036 | 0.135 |       |
| Angel Pagan       | 495 | 71  | 137 | 12  | 55  | 15 | 0.277 | 0.331 | 0.419 | 0.75  | 40.50%  | 0.111  | 0.024 | 0.143 |       |
| Wil Myers         | 599 | 99  | 155 | 28  | 94  | 28 | 0.259 | 0.336 | 0.461 | 0.797 | 40.80%  | 0.157  | 0.047 | 0.165 |       |
| Nick Markakis     | 599 | 67  | 161 | 13  | 89  | 0  | 0.269 | 0.346 | 0.398 | 0.744 | 40.90%  | 0.149  | 0.022 | 0.112 |       |
| Mookie Betts      | 672 | 122 | 214 | 31  | 113 | 26 | 0.318 | 0.363 | 0.534 | 0.897 | 41.20%  | 0.168  | 0.046 | 0.182 |       |
| Jason Heyward     | 530 | 61  | 122 | 7   | 49  | 11 | 0.23  | 0.306 | 0.325 | 0.631 | 41.30%  | 0.092  | 0.013 | 0.115 |       |
| Joe Panik         | 464 | 67  | 111 | 10  | 62  | 5  | 0.239 | 0.315 | 0.38  | 0.695 | 41.70%  | 0.134  | 0.022 | 0.144 |       |
| DJ LeMahieu       | 552 | 104 | 192 | 11  | 66  | 11 | 0.348 | 0.416 | 0.495 | 0.911 | 41.90%  | 0.120  | 0.020 | 0.188 |       |
| Josh Donaldson    | 577 | 122 | 164 | 37  | 99  | 7  | 0.284 | 0.404 | 0.549 | 0.953 | 42.00%  | 0.172  | 0.064 | 0.211 |       |
| Joey Votto        | 556 | 101 | 181 | 29  | 97  | 8  | 0.326 | 0.434 | 0.551 | 0.985 | 42.20%  | 0.174  | 0.052 | 0.182 |       |
| Kyle Seager       | 597 | 89  | 166 | 30  | 99  | 3  | 0.278 | 0.359 | 0.5   | 0.859 | 42.60%  | 0.166  | 0.050 | 0.149 |       |
| Edwin Encarnacion | 601 | 99  | 158 | 42  | 127 | 2  | 0.263 | 0.357 | 0.529 | 0.886 | 42.60%  | 0.211  | 0.070 | 0.165 |       |
| Anthony Rendon    | 567 | 91  | 153 | 20  | 85  | 12 | 0.27  | 0.348 | 0.449 | 0.797 | 42.70%  | 0.150  | 0.035 | 0.160 |       |
| Chris Davis       | 566 | 99  | 125 | 38  | 84  | 1  | 0.221 | 0.332 | 0.46  | 0.792 | 42.70%  | 0.148  | 0.067 | 0.175 |       |
| Bryce Harper      | 506 | 84  | 123 | 24  | 86  | 21 | 0.243 | 0.373 | 0.441 | 0.814 | 42.70%  | 0.170  | 0.047 | 0.166 |       |
| Jason Kipnis      | 610 | 91  | 168 | 23  | 82  | 15 | 0.275 | 0.343 | 0.468 | 0.811 | 43.00%  | 0.134  | 0.038 | 0.149 |       |
| Jonathan Villar   | 589 | 92  | 168 | 19  | 63  | 62 | 0.285 | 0.369 | 0.457 | 0.826 | 43.00%  | 0.107  | 0.032 | 0.156 |       |
| Dustin Pedroia    | 633 | 105 | 201 | 15  | 74  | 7  | 0.318 | 0.376 | 0.449 | 0.825 | 43.10%  | 0.117  | 0.024 | 0.166 |       |
| Jonathan Lucroy   | 490 | 67  | 143 | 24  | 81  | 5  | 0.292 | 0.355 | 0.5   | 0.855 | 43.10%  | 0.165  | 0.049 | 0.137 |       |
| Elvis Andrus      | 506 | 75  | 153 | 8   | 69  | 24 | 0.302 | 0.362 | 0.438 | 0.8   | 43.20%  | 0.136  | 0.016 | 0.148 |       |
| Eugenio Suarez    | 565 | 78  | 140 | 21  | 70  | 11 | 0.248 | 0.317 | 0.411 | 0.728 | 43.40%  | 0.124  | 0.037 | 0.138 |       |
| Alex Gordon       | 445 | 62  | 98  | 17  | 40  | 8  | 0.22  | 0.312 | 0.38  | 0.692 | 43.70%  | 0.090  | 0.038 | 0.139 |       |
| Chris Carter      | 549 | 84  | 122 | 41  | 94  | 3  | 0.222 | 0.321 | 0.5   | 0.821 | 43.70%  | 0.171  | 0.075 | 0.153 |       |
| Jordy Mercer      | 519 | 66  | 133 | 11  | 59  | 1  | 0.256 | 0.328 | 0.373 | 0.701 | 43.80%  | 0.114  | 0.021 | 0.127 |       |
| Brian Dozier      | 615 | 104 | 165 | 42  | 99  | 18 | 0.268 | 0.34  | 0.546 | 0.886 | 43.80%  | 0.161  | 0.068 | 0.169 |       |
| Jose Ramirez      | 565 | 84  | 176 | 11  | 76  | 22 | 0.312 | 0.363 | 0.462 | 0.825 | 43.90%  | 0.135  | 0.019 | 0.149 |       |
| Jake Lamb         | 523 | 81  | 130 | 29  | 91  | 6  | 0.249 | 0.332 | 0.508 | 0.84  | 43.90%  | 0.174  | 0.055 | 0.155 |       |
| Mike Napoli       | 557 | 92  | 133 | 34  | 101 | 5  | 0.239 | 0.335 | 0.465 | 0.8   | 44.00%  | 0.181  | 0.061 | 0.165 |       |
| Denard Span       | 572 | 70  | 152 | 11  | 53  | 12 | 0.266 | 0.331 | 0.381 | 0.712 | 44.00%  | 0.093  | 0.019 | 0.122 |       |
| Chase Headley     | 467 | 58  | 118 | 14  | 51  | 8  | 0.253 | 0.331 | 0.385 | 0.716 | 44.00%  | 0.109  | 0.030 | 0.124 |       |
| Justin Upton      | 570 | 81  | 140 | 31  | 87  | 9  | 0.246 | 0.31  | 0.465 | 0.775 | 44.10%  | 0.153  | 0.054 | 0.142 |       |
| Danny Valencia    | 471 | 72  | 135 | 17  | 51  | 1  | 0.287 | 0.346 | 0.446 | 0.792 | 44.10%  | 0.108  | 0.036 | 0.153 |       |
| Jose Iglesias     | 467 | 57  | 119 | 4   | 32  | 7  | 0.255 | 0.306 | 0.337 | 0.643 | 44.10%  | 0.069  | 0.009 | 0.122 |       |
| Cesar Hernandez   | 547 | 67  | 161 | 6   | 39  | 17 | 0.294 | 0.371 | 0.393 | 0.764 | 44.30%  | 0.071  | 0.011 | 0.122 |       |
| David Ortiz       | 537 | 79  | 169 | 38  | 127 | 2  | 0.315 | 0.401 | 0.62  | 1.021 | 44.40%  | 0.236  | 0.071 | 0.147 |       |

-0.0759263 0.15146803 0.12183947 0.15107365 0.08816185 0.08480603 -0.2505305

-0.0266435

1 0.09192087 0.07740164 -0.2398545

AB R H HR RBI SB AVG OBP OPS Swing % RBI/AB HR/AB R/AB



## Chart 4

Selective Hitters Career Stats

|                   | AB        | R          | H        | HR         | RBI        | SB         | AVG        | OBP   | SLG   | OPS        | Swing % | RBI/AB     | HR/AB     | R/AB       |
|-------------------|-----------|------------|----------|------------|------------|------------|------------|-------|-------|------------|---------|------------|-----------|------------|
| Ben Zobrist       | 4840      | 735        | 1287     | 145        | 643        | 111        | 0.266      | 0.358 | 0.433 | 0.791      | 35.50%  | 0.133      | 0.030     | 0.152      |
| Joe Mauer         | 5919      | 885        | 1826     | 130        | 804        | 50         | 0.308      | 0.391 | 0.446 | 0.837      | 35.80%  | 0.136      | 0.022     | 0.150      |
| Curtis Granderson | 6127      | 1039       | 1564     | 293        | 801        | 145        | 0.255      | 0.34  | 0.474 | 0.814      | 36.60%  | 0.131      | 0.048     | 0.170      |
| Jose Bautista     | 5139      | 878        | 1311     | 308        | 862        | 60         | 0.255      | 0.368 | 0.493 | 0.861      | 36.60%  | 0.168      | 0.060     | 0.171      |
| Brett Gardner     | 3605      | 599        | 950      | 63         | 342        | 218        | 0.264      | 0.346 | 0.388 | 0.734      | 36.80%  | 0.095      | 0.017     | 0.166      |
| Jayson Werth      | 5232      | 848        | 1408     | 219        | 770        | 128        | 0.269      | 0.362 | 0.458 | 0.82       | 38.20%  | 0.147      | 0.042     | 0.162      |
| Matt Carpenter    | 2579      | 451        | 733      | 74         | 335        | 13         | 0.284      | 0.376 | 0.462 | 0.838      | 38.60%  | 0.130      | 0.029     | 0.175      |
| Mike Trout        | 2997      | 600        | 917      | 168        | 497        | 143        | 0.306      | 0.405 | 0.558 | 0.963      | 38.80%  | 0.166      | 0.056     | 0.200      |
| Russell Martin    | 4896      | 688        | 1246     | 162        | 691        | 99         | 0.254      | 0.35  | 0.405 | 0.755      | 38.90%  | 0.141      | 0.033     | 0.141      |
| Dexter Fowler     | 3734      | 623        | 1001     | 78         | 339        | 127        | 0.268      | 0.366 | 0.422 | 0.788      | 39.00%  | 0.091      | 0.021     | 0.167      |
| Paul Goldschmidt  | 2824      | 497        | 844      | 140        | 507        | 99         | 0.299      | 0.398 | 0.526 | 0.924      | 39.10%  | 0.180      | 0.050     | 0.176      |
| Carlos Santana    | 3423      | 483        | 847      | 151        | 508        | 35         | 0.247      | 0.365 | 0.444 | 0.809      | 39.10%  | 0.148      | 0.044     | 0.141      |
| Logan Forsythe    | 2037      | 256        | 519      | 55         | 203        | 34         | 0.255      | 0.326 | 0.395 | 0.721      | 39.60%  | 0.100      | 0.027     | 0.126      |
| Martin Prado      | 4791      | 609        | 1402     | 95         | 564        | 39         | 0.293      | 0.342 | 0.424 | 0.766      | 39.80%  | 0.118      | 0.020     | 0.127      |
| Chase Utley       | 6384      | 1042       | 1777     | 250        | 977        | 145        | 0.278      | 0.361 | 0.472 | 0.833      | 40.20%  | 0.153      | 0.039     | 0.163      |
| Christian Yelich  | 1876      | 269        | 549      | 41         | 212        | 56         | 0.293      | 0.368 | 0.43  | 0.798      | 40.50%  | 0.113      | 0.022     | 0.143      |
| Angel Pagan       | 4084      | 584        | 1143     | 64         | 414        | 176        | 0.28       | 0.33  | 0.408 | 0.738      | 40.50%  | 0.101      | 0.016     | 0.143      |
| Wil Myers         | 1484      | 226        | 382      | 55         | 211        | 44         | 0.257      | 0.331 | 0.428 | 0.759      | 40.80%  | 0.142      | 0.037     | 0.152      |
| Nick Markakis     | 6542      | 889        | 1889     | 157        | 800        | 63         | 0.289      | 0.358 | 0.426 | 0.784      | 40.90%  | 0.122      | 0.024     | 0.136      |
| Mookie Betts      | 1458      | 248        | 443      | 54         | 208        | 54         | 0.304      | 0.355 | 0.5   | 0.855      | 41.20%  | 0.143      | 0.037     | 0.170      |
| Jason Heyward     | 3535      | 507        | 926      | 104        | 401        | 97         | 0.262      | 0.346 | 0.415 | 0.761      | 41.30%  | 0.113      | 0.029     | 0.143      |
| Joe Panik         | 1115      | 157        | 312      | 19         | 117        | 8          | 0.28       | 0.343 | 0.403 | 0.746      | 41.70%  | 0.105      | 0.017     | 0.141      |
| Di LeMahieu       | 2303      | 316        | 690      | 26         | 223        | 63         | 0.3        | 0.351 | 0.4   | 0.751      | 41.90%  | 0.097      | 0.011     | 0.137      |
| Josh Donaldson    | 2690      | 461        | 748      | 141        | 450        | 30         | 0.278      | 0.365 | 0.503 | 0.868      | 42.00%  | 0.167      | 0.052     | 0.171      |
| Joey Votto        | 4501      | 757        | 1407     | 221        | 730        | 67         | 0.313      | 0.425 | 0.536 | 0.961      | 42.20%  | 0.162      | 0.049     | 0.168      |
| Kyle Seager       | 3201      | 408        | 851      | 126        | 437        | 41         | 0.266      | 0.334 | 0.446 | 0.78       | 42.60%  | 0.137      | 0.039     | 0.127      |
| Edwin Encarnacion | 5409      | 829        | 1439     | 310        | 942        | 56         | 0.266      | 0.352 | 0.498 | 0.85       | 42.60%  | 0.174      | 0.057     | 0.153      |
| Anthony Rendon    | 1842      | 285        | 504      | 53         | 228        | 31         | 0.274      | 0.345 | 0.432 | 0.777      | 42.70%  | 0.124      | 0.029     | 0.155      |
| Chris Davis       | 3693      | 573        | 922      | 241        | 633        | 16         | 0.25       | 0.33  | 0.499 | 0.829      | 42.70%  | 0.171      | 0.065     | 0.155      |
| Bryce Harper      | 2336      | 412        | 651      | 121        | 334        | 58         | 0.279      | 0.382 | 0.501 | 0.883      | 42.70%  | 0.143      | 0.052     | 0.176      |
| Jason Kipnis      | 2966      | 434        | 808      | 76         | 354        | 115        | 0.272      | 0.345 | 0.423 | 0.768      | 43.00%  | 0.119      | 0.026     | 0.146      |
| Jonathan Villar   | 1178      | 167        | 307      | 29         | 109        | 104        | 0.261      | 0.336 | 0.405 | 0.741      | 43.00%  | 0.093      | 0.025     | 0.142      |
| Dustin Pedroia    | 5594      | 874        | 1683     | 133        | 662        | 134        | 0.301      | 0.366 | 0.445 | 0.811      | 43.10%  | 0.118      | 0.024     | 0.156      |
| Jonathan Lucroy   | 2990      | 365        | 848      | 90         | 418        | 29         | 0.284      | 0.343 | 0.441 | 0.784      | 43.10%  | 0.140      | 0.030     | 0.122      |
| Elvis Andrus      | 4625      | 648        | 1266     | 35         | 436        | 241        | 0.274      | 0.335 | 0.357 | 0.692      | 43.20%  | 0.094      | 0.008     | 0.140      |
| Eugenio Suarez    | 1181      | 153        | 303      | 38         | 141        | 18         | 0.257      | 0.316 | 0.407 | 0.723      | 43.40%  | 0.119      | 0.032     | 0.130      |
| Alex Gordon       | 4690      | 667        | 1238     | 151        | 563        | 89         | 0.264      | 0.345 | 0.429 | 0.774      | 43.70%  | 0.120      | 0.032     | 0.142      |
| Chris Carter      | 2285      | 314        | 499      | 150        | 374        | 12         | 0.218      | 0.314 | 0.463 | 0.777      | 43.70%  | 0.164      | 0.066     | 0.137      |
| Jordy Mercer      | 1814      | 196        | 466      | 35         | 180        | 11         | 0.257      | 0.313 | 0.378 | 0.691      | 43.80%  | 0.099      | 0.019     | 0.108      |
| Brian Dozier      | 2715      | 422        | 668      | 117        | 346        | 74         | 0.246      | 0.32  | 0.442 | 0.762      | 43.80%  | 0.127      | 0.043     | 0.155      |
| Jose Ramirez      | 1129      | 166        | 311      | 19         | 120        | 42         | 0.275      | 0.331 | 0.404 | 0.735      | 43.90%  | 0.106      | 0.017     | 0.147      |
| Jake Lamb         | 999       | 134        | 251      | 39         | 136        | 10         | 0.251      | 0.323 | 0.449 | 0.772      | 43.90%  | 0.136      | 0.039     | 0.134      |
| Mike Napoli       | 4147      | 637        | 1043     | 238        | 678        | 38         | 0.252      | 0.352 | 0.48  | 0.832      | 44.00%  | 0.163      | 0.057     | 0.154      |
| Denard Span       | 4392      | 637        | 1249     | 48         | 389        | 164        | 0.284      | 0.35  | 0.392 | 0.742      | 44.00%  | 0.089      | 0.011     | 0.145      |
| Chase Headley     | 4524      | 558        | 1191     | 118        | 531        | 84         | 0.263      | 0.343 | 0.401 | 0.744      | 44.00%  | 0.117      | 0.026     | 0.123      |
| Justin Upton      | 4899      | 775        | 1315     | 221        | 703        | 124        | 0.268      | 0.347 | 0.472 | 0.819      | 44.10%  | 0.143      | 0.045     | 0.158      |
| Danny Valencia    | 2258      | 278        | 613      | 72         | 303        | 8          | 0.271      | 0.317 | 0.431 | 0.748      | 44.10%  | 0.134      | 0.032     | 0.123      |
| Jose Iglesias     | 1307      | 148        | 360      | 10         | 86         | 24         | 0.275      | 0.325 | 0.353 | 0.678      | 44.10%  | 0.066      | 0.008     | 0.113      |
| Cesar Hernandez   | 1187      | 154        | 333      | 8          | 88         | 37         | 0.281      | 0.35  | 0.361 | 0.711      | 44.30%  | 0.074      | 0.007     | 0.130      |
| David Ortiz       | 8640      | 1419       | 2472     | 541        | 1768       | 17         | 0.286      | 0.38  | 0.551 | 0.931      | 44.40%  | 0.205      | 0.063     | 0.164      |
|                   | -0.348129 | -0.2869722 | -0.14711 | -0.2143309 | -0.3020982 | -0.1246944 | -0.4063461 |       |       | -0.2611443 | 1       | -0.1188062 | -0.048479 | -0.4268003 |
|                   | AB        | R          | H        | HR         | RBI        | SB         | AVG        | OBP   |       | OPS        | Swing % | RBI/AB     | HR/AB     | R/AB       |

## Chart 5

| All Players 2016 |                   |              |     |     |    |     |     |       |       |       |       |        |            |            |            |
|------------------|-------------------|--------------|-----|-----|----|-----|-----|-------|-------|-------|-------|--------|------------|------------|------------|
| #                | Min. 100 PA       |              |     |     |    |     |     |       |       |       |       |        |            |            |            |
|                  | Name              | Team         | AB  | H   | HR | R   | RBI | AVG   | OBP   | SLG   | OPS   | Swing% | R/AB       | RBI/AB     | HR/AB      |
| 1                | Gary Sanchez      | Yankees      | 201 | 60  | 20 | 34  | 42  | 0.299 | 0.376 | 0.657 | 1.032 | 45.10% | 0.16915423 | 0.20895522 | 0.09950249 |
| 2                | David Ortiz       | Red Sox      | 537 | 169 | 38 | 79  | 127 | 0.315 | 0.401 | 0.62  | 1.021 | 44.40% | 0.14711359 | 0.23649907 | 0.0707635  |
| 3                | Mike Trout        | Angels       | 549 | 173 | 29 | 123 | 100 | 0.315 | 0.441 | 0.55  | 0.991 | 38.80% | 0.22404372 | 0.18214936 | 0.05282332 |
| 4                | Joey Votto        | Reds         | 556 | 181 | 29 | 101 | 97  | 0.326 | 0.434 | 0.55  | 0.985 | 42.20% | 0.18165468 | 0.17446043 | 0.05215827 |
| 5                | Daniel Murphy     | Nationals    | 531 | 184 | 25 | 88  | 104 | 0.347 | 0.39  | 0.595 | 0.985 | 46.80% | 0.16572505 | 0.19585687 | 0.04708098 |
| 6                | Josh Donaldson    | Blue Jays    | 577 | 164 | 37 | 122 | 99  | 0.284 | 0.404 | 0.549 | 0.953 | 42.00% | 0.21143847 | 0.17157712 | 0.06412478 |
| 7                | Freddie Freeman   | Braves       | 589 | 178 | 34 | 102 | 91  | 0.302 | 0.4   | 0.569 | 0.968 | 52.60% | 0.17317487 | 0.15449915 | 0.05772496 |
| 8                | Miguel Cabrera    | Tigers       | 595 | 188 | 38 | 92  | 108 | 0.316 | 0.393 | 0.563 | 0.956 | 49.50% | 0.15462185 | 0.18151261 | 0.06386555 |
| 9                | Kris Bryant       | Cubs         | 603 | 176 | 39 | 121 | 102 | 0.292 | 0.385 | 0.554 | 0.939 | 48.80% | 0.20066335 | 0.16915423 | 0.06467662 |
| 10               | Trea Turner       | Nationals    | 307 | 105 | 13 | 53  | 40  | 0.342 | 0.37  | 0.567 | 0.937 | 47.20% | 0.17263844 | 0.13029316 | 0.04234528 |
| 11               | Charlie Blackmon  | Rockies      | 578 | 187 | 29 | 111 | 82  | 0.324 | 0.381 | 0.552 | 0.933 | 46.90% | 0.19204152 | 0.14186851 | 0.05017301 |
| 12               | DJ LeMahieu       | Rockies      | 552 | 192 | 11 | 104 | 66  | 0.348 | 0.416 | 0.495 | 0.911 | 41.90% | 0.1884058  | 0.11956522 | 0.01992754 |
| 13               | Anthony Rizzo     | Cubs         | 583 | 170 | 32 | 94  | 109 | 0.292 | 0.385 | 0.544 | 0.928 | 45.20% | 0.16123499 | 0.18696398 | 0.05488851 |
| 14               | Jose Altuve       | Astros       | 640 | 216 | 24 | 108 | 96  | 0.338 | 0.396 | 0.531 | 0.928 | 49.10% | 0.16875    | 0.15       | 0.0375     |
| 15               | Nolan Arenado     | Rockies      | 618 | 182 | 41 | 116 | 133 | 0.294 | 0.362 | 0.57  | 0.932 | 48.80% | 0.18770227 | 0.21521036 | 0.06634304 |
| 16               | J.D. Martinez     | Tigers       | 460 | 141 | 22 | 69  | 68  | 0.307 | 0.373 | 0.535 | 0.908 | 52.50% | 0.18010753 | 0.19354839 | 0.04782609 |
| 17               | Nelson Cruz       | Mariners     | 589 | 169 | 43 | 96  | 105 | 0.287 | 0.36  | 0.555 | 0.915 | 47.80% | 0.16298812 | 0.17826825 | 0.07300509 |
| 18               | Paul Goldschmidt  | Diamondbacks | 579 | 172 | 24 | 106 | 95  | 0.297 | 0.411 | 0.489 | 0.899 | 39.10% | 0.18307427 | 0.16407599 | 0.04145078 |
| 19               | Trevor Story      | Rockies      | 372 | 101 | 27 | 67  | 72  | 0.272 | 0.341 | 0.567 | 0.909 | 46.20% | 0.18010753 | 0.19354839 | 0.07258065 |
| 20               | Mookie Betts      | Red Sox      | 672 | 214 | 31 | 122 | 113 | 0.318 | 0.363 | 0.534 | 0.897 | 41.20% | 0.18154762 | 0.16815476 | 0.04613095 |
| 21               | Ryan Braun        | Brewers      | 511 | 156 | 30 | 80  | 91  | 0.305 | 0.365 | 0.538 | 0.903 | 51.80% | 0.15655577 | 0.17808219 | 0.05870841 |
| 22               | Matt Joyce        | Pirates      | 231 | 56  | 13 | 45  | 42  | 0.242 | 0.403 | 0.463 | 0.866 | 38.20% | 0.19480519 | 0.18181818 | 0.05627706 |
| 23               | Matt Carpenter    | Cardinals    | 473 | 128 | 21 | 81  | 68  | 0.271 | 0.38  | 0.505 | 0.885 | 38.60% | 0.17124736 | 0.14376321 | 0.04439746 |
| 24               | Tyler Naquin      | Indians      | 321 | 95  | 14 | 52  | 43  | 0.296 | 0.372 | 0.514 | 0.886 | 51.20% | 0.16199377 | 0.13395639 | 0.04361371 |
| 25               | Brandon Belt      | Giants       | 542 | 149 | 17 | 77  | 82  | 0.275 | 0.394 | 0.474 | 0.868 | 47.50% | 0.14206642 | 0.15129151 | 0.03136531 |
| 26               | Edwin Encarnacion | Blue Jays    | 601 | 158 | 42 | 99  | 127 | 0.263 | 0.357 | 0.529 | 0.886 | 42.60% | 0.16472546 | 0.21131448 | 0.06988353 |
| 27               | Corey Seager      | Dodgers      | 627 | 193 | 26 | 105 | 72  | 0.308 | 0.365 | 0.512 | 0.877 | 52.90% | 0.16746411 | 0.11483254 | 0.0414673  |
| 28               | Adrian Beltre     | Rangers      | 583 | 175 | 32 | 89  | 104 | 0.3   | 0.358 | 0.521 | 0.879 | 49.20% | 0.15265866 | 0.17838765 | 0.05488851 |
| 29               | Jean Segura       | Diamondbacks | 637 | 203 | 20 | 102 | 64  | 0.319 | 0.368 | 0.499 | 0.867 | 46.50% | 0.16012559 | 0.10047096 | 0.03139717 |
| 30               | Steve Pearce      | ---          | 264 | 76  | 13 | 35  | 35  | 0.288 | 0.374 | 0.492 | 0.867 | 45.20% | 0.13257576 | 0.13257576 | 0.04924242 |
| 31               | Robinson Cano     | Mariners     | 655 | 195 | 39 | 107 | 103 | 0.298 | 0.35  | 0.533 | 0.882 | 51.40% | 0.16335878 | 0.15725191 | 0.05954198 |
| 32               | Brian Dozier      | Twins        | 615 | 165 | 42 | 104 | 99  | 0.268 | 0.34  | 0.546 | 0.886 | 43.80% | 0.16910569 | 0.16097561 | 0.06829268 |
| 33               | Carlos Santana    | Indians      | 582 | 151 | 34 | 89  | 87  | 0.259 | 0.366 | 0.498 | 0.865 | 39.10% | 0.15292096 | 0.14948454 | 0.05841924 |
| 34               | Aledmys Diaz      | Cardinals    | 404 | 121 | 17 | 71  | 65  | 0.3   | 0.369 | 0.51  | 0.879 | 45.20% | 0.17574257 | 0.16089109 | 0.04207921 |
| 35               | Yoenis Cespedes   | Mets         | 479 | 134 | 31 | 72  | 86  | 0.28  | 0.354 | 0.53  | 0.884 | 47.60% | 0.15031315 | 0.17954071 | 0.06471816 |
| 36               | Jung Ho Kang      | Pirates      | 318 | 81  | 21 | 45  | 62  | 0.255 | 0.354 | 0.513 | 0.867 | 40.70% | 0.14150943 | 0.19496855 | 0.06603774 |
| 37               | Christian Yelich  | Marlins      | 578 | 172 | 21 | 78  | 98  | 0.298 | 0.376 | 0.483 | 0.859 | 40.50% | 0.1349481  | 0.16955017 | 0.03633218 |
| 38               | Hanley Ramirez    | Red Sox      | 549 | 157 | 30 | 81  | 111 | 0.286 | 0.361 | 0.505 | 0.866 | 46.80% | 0.14754098 | 0.20218579 | 0.05464481 |
| 39               | Dexter Fowler     | Cubs         | 456 | 126 | 13 | 84  | 48  | 0.276 | 0.393 | 0.447 | 0.84  | 39.00% | 0.18421053 | 0.10526316 | 0.02850877 |
| 40               | David Dahl        | Rockies      | 222 | 70  | 7  | 42  | 24  | 0.315 | 0.359 | 0.5   | 0.859 | 52.90% | 0.18918919 | 0.10810811 | 0.03153153 |
| 41               | Manny Machado     | Orioles      | 640 | 188 | 37 | 105 | 96  | 0.294 | 0.343 | 0.533 | 0.876 | 49.70% | 0.1640625  | 0.15       | 0.0578125  |
| 42               | Andrew Toles      | Dodgers      | 105 | 33  | 3  | 19  | 16  | 0.314 | 0.365 | 0.505 | 0.87  | 56.30% | 0.18095238 | 0.15238095 | 0.02857143 |
| 43               | Ryon Healy        | Athletics    | 269 | 82  | 13 | 36  | 37  | 0.305 | 0.337 | 0.524 | 0.861 | 44.60% | 0.133829   | 0.13754647 | 0.04832714 |
| 44               | Chris Young       | Red Sox      | 203 | 56  | 9  | 29  | 24  | 0.276 | 0.352 | 0.498 | 0.85  | 41.90% | 0.14285714 | 0.1182266  | 0.04433498 |
| 45               | Sean Rodriguez    | Pirates      | 300 | 81  | 18 | 49  | 56  | 0.27  | 0.349 | 0.51  | 0.859 | 47.70% | 0.16333333 | 0.18666667 | 0.06       |
| 46               | Robbie Grossman   | Twins        | 332 | 93  | 11 | 49  | 37  | 0.28  | 0.386 | 0.443 | 0.828 | 37.60% | 0.14759036 | 0.11144578 | 0.03313253 |
| 47               | Kyle Seager       | Mariners     | 597 | 166 | 30 | 89  | 99  | 0.278 | 0.359 | 0.499 | 0.859 | 42.60% | 0.14907873 | 0.16582915 | 0.05025126 |
| 48               | Willson Contreras | Cubs         | 252 | 71  | 12 | 33  | 35  | 0.282 | 0.357 | 0.488 | 0.845 | 47.40% | 0.13095238 | 0.13888889 | 0.04761905 |
| 49               | Ryan Schimpf      | Padres       | 276 | 60  | 20 | 48  | 51  | 0.217 | 0.336 | 0.533 | 0.869 | 43.30% | 0.17391304 | 0.18478261 | 0.07246377 |
| 50               | Sandy Leon        | Red Sox      | 252 | 78  | 7  | 36  | 35  | 0.31  | 0.369 | 0.476 | 0.845 | 43.50% | 0.14285714 | 0.13888889 | 0.02777778 |



Chart 6

|     |                    |              |     |     |    |     |     |       |       |       |       |        |            |            |            |
|-----|--------------------|--------------|-----|-----|----|-----|-----|-------|-------|-------|-------|--------|------------|------------|------------|
| 51  | Stephen Drew       | Nationals    | 143 | 38  | 8  | 24  | 21  | 0.266 | 0.339 | 0.524 | 0.864 | 42.30% | 0.16783217 | 0.14685315 | 0.05594406 |
| 52  | Jonathan Lucroy    | ---          | 490 | 143 | 24 | 67  | 81  | 0.292 | 0.355 | 0.5   | 0.855 | 43.10% | 0.13673469 | 0.16530612 | 0.04897959 |
| 53  | Wilson Ramos       | Nationals    | 482 | 148 | 22 | 58  | 80  | 0.307 | 0.354 | 0.496 | 0.85  | 50.30% | 0.12033195 | 0.1659751  | 0.04564315 |
| 54  | Carlos Gonzalez    | Rockies      | 584 | 174 | 25 | 87  | 100 | 0.298 | 0.35  | 0.505 | 0.855 | 51.60% | 0.1489726  | 0.17123288 | 0.04280822 |
| 55  | Anthony Recker     | Braves       | 90  | 25  | 2  | 6   | 15  | 0.278 | 0.394 | 0.433 | 0.828 | 36.40% | 0.06666667 | 0.16666667 | 0.02222222 |
| 56  | Ben Zobrist        | Cubs         | 523 | 142 | 18 | 94  | 76  | 0.272 | 0.386 | 0.446 | 0.831 | 35.50% | 0.17973231 | 0.14531549 | 0.03441683 |
| 57  | Joc Pederson       | Dodgers      | 406 | 100 | 25 | 64  | 68  | 0.246 | 0.352 | 0.495 | 0.847 | 41.40% | 0.15763547 | 0.16748768 | 0.06157635 |
| 58  | Carlos Beltran     | ---          | 552 | 163 | 29 | 73  | 93  | 0.295 | 0.337 | 0.513 | 0.85  | 46.00% | 0.13224638 | 0.16847826 | 0.05253623 |
| 59  | Mark Trumbo        | Orioles      | 613 | 157 | 47 | 94  | 108 | 0.256 | 0.316 | 0.533 | 0.85  | 49.40% | 0.15334421 | 0.17618271 | 0.0766721  |
| 60  | Dustin Pedroia     | Red Sox      | 633 | 201 | 15 | 105 | 74  | 0.318 | 0.376 | 0.449 | 0.825 | 43.10% | 0.16587678 | 0.11690363 | 0.02369668 |
| 61  | Chris Herrmann     | Diamondbacks | 148 | 42  | 6  | 21  | 28  | 0.284 | 0.352 | 0.493 | 0.845 | 48.70% | 0.14189189 | 0.18918919 | 0.04054054 |
| 62  | Andrew Benintendi  | Red Sox      | 105 | 31  | 2  | 16  | 14  | 0.295 | 0.359 | 0.476 | 0.835 | 42.70% | 0.15238095 | 0.13333333 | 0.01904762 |
| 63  | Ian Kinsler        | Tigers       | 618 | 178 | 28 | 117 | 83  | 0.288 | 0.348 | 0.484 | 0.831 | 44.90% | 0.18932039 | 0.13430421 | 0.04530744 |
| 64  | Jonathan Villar    | Brewers      | 589 | 168 | 19 | 92  | 63  | 0.285 | 0.369 | 0.457 | 0.826 | 43.00% | 0.15619694 | 0.10696095 | 0.03225806 |
| 65  | Jose Ramirez       | Indians      | 565 | 176 | 11 | 84  | 76  | 0.312 | 0.363 | 0.462 | 0.825 | 43.90% | 0.14867257 | 0.13451327 | 0.01946903 |
| 66  | Jose Bautista      | Blue Jays    | 423 | 99  | 22 | 68  | 69  | 0.234 | 0.366 | 0.452 | 0.817 | 36.60% | 0.1607565  | 0.16312057 | 0.05200946 |
| 67  | Jackie Bradley Jr. | Red Sox      | 558 | 149 | 26 | 94  | 87  | 0.267 | 0.349 | 0.486 | 0.835 | 45.10% | 0.16845878 | 0.15591398 | 0.04659498 |
| 68  | Justin Turner      | Dodgers      | 556 | 153 | 27 | 79  | 90  | 0.275 | 0.339 | 0.493 | 0.832 | 44.40% | 0.14208633 | 0.1618705  | 0.04856115 |
| 69  | George Springer    | Astros       | 644 | 168 | 29 | 116 | 82  | 0.261 | 0.359 | 0.457 | 0.815 | 47.40% | 0.18012422 | 0.12732919 | 0.04503106 |
| 70  | Jake Lamb          | Diamondbacks | 523 | 130 | 29 | 81  | 91  | 0.249 | 0.332 | 0.509 | 0.84  | 43.90% | 0.15487572 | 0.17399618 | 0.05544933 |
| 71  | Hyun Soo Kim       | Orioles      | 305 | 92  | 6  | 36  | 22  | 0.302 | 0.382 | 0.42  | 0.801 | 39.40% | 0.11803279 | 0.07213115 | 0.01967213 |
| 72  | Kennys Vargas      | Twins        | 152 | 35  | 10 | 27  | 20  | 0.23  | 0.333 | 0.5   | 0.833 | 41.00% | 0.17763158 | 0.13157895 | 0.06578947 |
| 73  | Cameron Maybin     | Tigers       | 349 | 110 | 4  | 65  | 43  | 0.315 | 0.383 | 0.418 | 0.801 | 41.90% | 0.18624642 | 0.12320917 | 0.01146132 |
| 74  | Brandon Guyer      | ---          | 293 | 78  | 9  | 39  | 32  | 0.266 | 0.372 | 0.423 | 0.795 | 49.70% | 0.1331058  | 0.10921502 | 0.03071672 |
| 75  | Starling Marte     | Pirates      | 489 | 152 | 9  | 71  | 46  | 0.311 | 0.362 | 0.456 | 0.818 | 54.10% | 0.14519427 | 0.09406953 | 0.01840491 |
| 76  | Neil Walker        | Mets         | 412 | 116 | 23 | 57  | 55  | 0.282 | 0.347 | 0.476 | 0.823 | 46.80% | 0.13834951 | 0.13349515 | 0.05582524 |
| 77  | Victor Martinez    | Tigers       | 553 | 160 | 27 | 65  | 86  | 0.289 | 0.351 | 0.476 | 0.826 | 46.90% | 0.11754069 | 0.15551537 | 0.04882459 |
| 78  | Luis Valbuena      | Astros       | 292 | 76  | 13 | 38  | 40  | 0.26  | 0.357 | 0.459 | 0.816 | 43.00% | 0.13013699 | 0.1369863  | 0.04452055 |
| 79  | Yasmani Grandal    | Dodgers      | 390 | 89  | 27 | 49  | 72  | 0.228 | 0.339 | 0.477 | 0.816 | 39.10% | 0.12564103 | 0.18461538 | 0.06923077 |
| 80  | Evan Longoria      | Rays         | 633 | 173 | 36 | 81  | 98  | 0.273 | 0.318 | 0.521 | 0.84  | 48.80% | 0.12796209 | 0.15481833 | 0.05687204 |
| 81  | Nick Castellanos   | Tigers       | 411 | 117 | 18 | 54  | 58  | 0.285 | 0.331 | 0.496 | 0.827 | 54.00% | 0.13138686 | 0.14111922 | 0.04379562 |
| 82  | Pedro Alvarez      | Orioles      | 337 | 84  | 22 | 43  | 49  | 0.249 | 0.322 | 0.504 | 0.826 | 45.90% | 0.12759644 | 0.14540059 | 0.0652819  |
| 83  | Khris Davis        | Athletics    | 555 | 137 | 42 | 85  | 102 | 0.247 | 0.307 | 0.524 | 0.831 | 52.00% | 0.15315315 | 0.18378378 | 0.07567568 |
| 84  | Carlos Correa      | Astros       | 577 | 158 | 20 | 76  | 96  | 0.274 | 0.361 | 0.451 | 0.811 | 44.80% | 0.13171577 | 0.16637782 | 0.03466205 |
| 85  | Jose Abreu         | White Sox    | 624 | 183 | 25 | 67  | 100 | 0.293 | 0.353 | 0.468 | 0.82  | 51.60% | 0.10737179 | 0.16025641 | 0.0400641  |
| 86  | Hunter Pence       | Giants       | 395 | 114 | 13 | 58  | 57  | 0.289 | 0.357 | 0.451 | 0.808 | 45.80% | 0.14683544 | 0.1443038  | 0.03291139 |
| 87  | Mark Reynolds      | Rockies      | 393 | 111 | 14 | 61  | 53  | 0.282 | 0.356 | 0.45  | 0.806 | 46.10% | 0.15521628 | 0.13486005 | 0.03562341 |
| 88  | Derek Dietrich     | Marlins      | 351 | 98  | 7  | 39  | 42  | 0.279 | 0.374 | 0.425 | 0.798 | 46.90% | 0.11111111 | 0.11965812 | 0.01994302 |
| 89  | Xander Bogaerts    | Red Sox      | 652 | 192 | 21 | 115 | 89  | 0.294 | 0.356 | 0.446 | 0.802 | 45.40% | 0.17638037 | 0.13650307 | 0.03220859 |
| 90  | Michael Saunders   | Blue Jays    | 490 | 124 | 24 | 70  | 57  | 0.253 | 0.338 | 0.478 | 0.815 | 44.70% | 0.14285714 | 0.11632653 | 0.04897959 |
| 91  | Jason Kipnis       | Indians      | 610 | 168 | 23 | 91  | 82  | 0.275 | 0.343 | 0.469 | 0.811 | 43.00% | 0.14918033 | 0.13442623 | 0.03770492 |
| 92  | Chris Carter       | Brewers      | 549 | 122 | 41 | 84  | 94  | 0.222 | 0.321 | 0.499 | 0.821 | 43.70% | 0.15300546 | 0.1712204  | 0.07468124 |
| 93  | T.J. Rivera        | Mets         | 105 | 35  | 3  | 10  | 16  | 0.333 | 0.345 | 0.476 | 0.821 | 54.80% | 0.0952381  | 0.15238095 | 0.02857143 |
| 94  | Yangervis Solarte  | Padres       | 405 | 116 | 15 | 55  | 71  | 0.286 | 0.341 | 0.467 | 0.808 | 50.50% | 0.13580247 | 0.17530864 | 0.03703704 |
| 95  | Asdrubal Cabrera   | Mets         | 521 | 146 | 23 | 65  | 62  | 0.28  | 0.336 | 0.474 | 0.81  | 50.50% | 0.12476008 | 0.11900192 | 0.04414587 |
| 96  | Stephen Piscotty   | Cardinals    | 582 | 159 | 22 | 86  | 85  | 0.273 | 0.343 | 0.457 | 0.8   | 52.30% | 0.14776632 | 0.14604811 | 0.03780069 |
| 97  | Evan Gattis        | Astros       | 447 | 112 | 32 | 58  | 72  | 0.251 | 0.319 | 0.508 | 0.826 | 45.80% | 0.12975391 | 0.16107383 | 0.07158837 |
| 98  | Yasmany Tomas      | Diamondbacks | 530 | 144 | 31 | 72  | 83  | 0.272 | 0.313 | 0.508 | 0.82  | 58.00% | 0.13584906 | 0.15660377 | 0.05849057 |
| 99  | Drew Butera        | Royals       | 123 | 35  | 4  | 18  | 16  | 0.285 | 0.328 | 0.48  | 0.808 | 48.90% | 0.14634146 | 0.1300813  | 0.03252033 |
| 100 | Elvis Andrus       | Rangers      | 506 | 153 | 8  | 75  | 69  | 0.302 | 0.362 | 0.439 | 0.8   | 43.20% | 0.14822134 | 0.13636364 | 0.01581028 |



Chart 7

|     |                    |              |     |     |    |     |     |       |       |       |       |        |            |            |            |
|-----|--------------------|--------------|-----|-----|----|-----|-----|-------|-------|-------|-------|--------|------------|------------|------------|
| 101 | Giancarlo Stanton  | Marlins      | 413 | 99  | 27 | 56  | 74  | 0.24  | 0.326 | 0.489 | 0.815 | 46.20% | 0.13559322 | 0.17917676 | 0.0653753  |
| 102 | David Wright       | Mets         | 137 | 31  | 7  | 18  | 14  | 0.226 | 0.35  | 0.438 | 0.788 | 38.10% | 0.13138686 | 0.10218978 | 0.05109489 |
| 103 | Adam Eaton         | White Sox    | 619 | 176 | 14 | 91  | 59  | 0.284 | 0.362 | 0.428 | 0.79  | 46.70% | 0.14701131 | 0.09531502 | 0.02261712 |
| 104 | Justin Bour        | Marlins      | 280 | 74  | 15 | 35  | 51  | 0.264 | 0.349 | 0.475 | 0.824 | 44.00% | 0.125      | 0.18214286 | 0.05357143 |
| 105 | Domingo Santana    | Brewers      | 246 | 63  | 11 | 34  | 32  | 0.256 | 0.345 | 0.447 | 0.792 | 41.00% | 0.13821138 | 0.1300813  | 0.04471545 |
| 106 | Bryce Harper       | Nationals    | 506 | 123 | 24 | 84  | 86  | 0.243 | 0.373 | 0.441 | 0.814 | 42.70% | 0.16600791 | 0.16996047 | 0.04743083 |
| 107 | Keon Broxton       | Brewers      | 207 | 50  | 9  | 28  | 19  | 0.242 | 0.354 | 0.43  | 0.784 | 42.30% | 0.1352657  | 0.09178744 | 0.04347826 |
| 108 | Mike Napoli        | Indians      | 557 | 133 | 34 | 92  | 101 | 0.239 | 0.335 | 0.465 | 0.8   | 44.00% | 0.16517056 | 0.18132855 | 0.06104129 |
| 109 | Anthony Rendon     | Nationals    | 567 | 153 | 20 | 91  | 85  | 0.27  | 0.348 | 0.45  | 0.797 | 42.70% | 0.16049383 | 0.14991182 | 0.03527337 |
| 110 | Melky Cabrera      | White Sox    | 591 | 175 | 14 | 70  | 86  | 0.296 | 0.345 | 0.455 | 0.8   | 49.10% | 0.11844332 | 0.14551607 | 0.02368866 |
| 111 | Danny Valencia     | Athletics    | 471 | 135 | 17 | 72  | 51  | 0.287 | 0.346 | 0.446 | 0.792 | 44.10% | 0.15286624 | 0.10828025 | 0.03609342 |
| 112 | Yadier Molina      | Cardinals    | 534 | 164 | 8  | 56  | 58  | 0.307 | 0.36  | 0.427 | 0.787 | 53.40% | 0.10486891 | 0.10861423 | 0.01498127 |
| 113 | Tommy Joseph       | Phillies     | 315 | 81  | 21 | 47  | 47  | 0.257 | 0.308 | 0.505 | 0.813 | 50.70% | 0.14920635 | 0.14920635 | 0.06666667 |
| 114 | Wil Myers          | Padres       | 599 | 155 | 28 | 99  | 94  | 0.259 | 0.336 | 0.461 | 0.797 | 40.80% | 0.16527546 | 0.15692821 | 0.04674457 |
| 115 | Buster Posey       | Giants       | 539 | 155 | 14 | 82  | 80  | 0.288 | 0.362 | 0.434 | 0.796 | 47.20% | 0.15213358 | 0.14842301 | 0.02597403 |
| 116 | Francisco Lindor   | Indians      | 604 | 182 | 15 | 99  | 78  | 0.301 | 0.358 | 0.435 | 0.794 | 47.30% | 0.16390728 | 0.12913907 | 0.02483444 |
| 117 | Kole Calhoun       | Angels       | 594 | 161 | 18 | 91  | 75  | 0.271 | 0.348 | 0.438 | 0.786 | 49.50% | 0.15319865 | 0.12626263 | 0.03030303 |
| 118 | Chris Davis        | Orioles      | 566 | 125 | 38 | 99  | 84  | 0.221 | 0.332 | 0.459 | 0.792 | 42.70% | 0.17491166 | 0.14840989 | 0.06713781 |
| 119 | Adam Rosales       | Padres       | 214 | 49  | 13 | 37  | 35  | 0.229 | 0.319 | 0.495 | 0.814 | 42.70% | 0.1728972  | 0.1635514  | 0.06074766 |
| 120 | Jay Bruce          | ---          | 539 | 135 | 33 | 74  | 99  | 0.25  | 0.309 | 0.506 | 0.815 | 51.80% | 0.13729128 | 0.18367347 | 0.06122449 |
| 121 | Josh Bell          | Pirates      | 128 | 35  | 3  | 18  | 19  | 0.273 | 0.368 | 0.406 | 0.775 | 44.60% | 0.140625   | 0.1484375  | 0.0234375  |
| 122 | Curtis Granderson  | Mets         | 545 | 129 | 30 | 88  | 59  | 0.237 | 0.335 | 0.464 | 0.799 | 36.60% | 0.16146789 | 0.10825688 | 0.05504587 |
| 123 | Mike Moustakas     | Royals       | 104 | 25  | 7  | 12  | 13  | 0.24  | 0.301 | 0.5   | 0.801 | 42.10% | 0.11538462 | 0.125      | 0.06730769 |
| 124 | Jedd Gyorko        | Cardinals    | 400 | 97  | 30 | 58  | 59  | 0.243 | 0.306 | 0.495 | 0.801 | 48.80% | 0.145      | 0.1475     | 0.075      |
| 125 | Kendrys Morales    | Royals       | 558 | 147 | 30 | 65  | 93  | 0.263 | 0.327 | 0.468 | 0.795 | 48.10% | 0.11648746 | 0.16666667 | 0.05376344 |
| 126 | Tyler Flowers      | Braves       | 281 | 76  | 8  | 27  | 41  | 0.27  | 0.357 | 0.42  | 0.777 | 45.70% | 0.09608541 | 0.14590747 | 0.02846975 |
| 127 | Greg Garcia        | Cardinals    | 214 | 59  | 3  | 33  | 17  | 0.276 | 0.393 | 0.369 | 0.762 | 39.00% | 0.15420561 | 0.07943925 | 0.01401869 |
| 128 | Robinson Chirinos  | Rangers      | 147 | 33  | 9  | 21  | 20  | 0.224 | 0.314 | 0.483 | 0.797 | 44.40% | 0.14285714 | 0.13605442 | 0.06122449 |
| 129 | Mike Zunino        | Mariners     | 164 | 34  | 12 | 16  | 31  | 0.207 | 0.318 | 0.47  | 0.787 | 46.50% | 0.09756098 | 0.18902439 | 0.07317073 |
| 130 | Odubel Herrera     | Phillies     | 583 | 167 | 15 | 87  | 49  | 0.286 | 0.361 | 0.42  | 0.781 | 48.40% | 0.14922813 | 0.08404803 | 0.02572899 |
| 131 | Devon Travis       | Blue Jays    | 410 | 123 | 11 | 54  | 50  | 0.3   | 0.332 | 0.454 | 0.785 | 49.30% | 0.13170732 | 0.12195122 | 0.02682927 |
| 132 | C.J. Cron          | Angels       | 407 | 113 | 16 | 51  | 69  | 0.278 | 0.325 | 0.467 | 0.792 | 52.30% | 0.12530713 | 0.16953317 | 0.03931204 |
| 133 | Wilmer Flores      | Mets         | 307 | 82  | 16 | 38  | 49  | 0.267 | 0.319 | 0.469 | 0.788 | 48.70% | 0.1237785  | 0.15960912 | 0.05211726 |
| 134 | Alex Dickerson     | Padres       | 253 | 65  | 10 | 39  | 37  | 0.257 | 0.333 | 0.455 | 0.788 | 47.70% | 0.1541502  | 0.14624506 | 0.03952569 |
| 135 | Rougned Odor       | Rangers      | 605 | 164 | 33 | 89  | 88  | 0.271 | 0.296 | 0.502 | 0.798 | 54.30% | 0.14710744 | 0.14545455 | 0.05454545 |
| 136 | Logan Forsythe     | Rays         | 511 | 135 | 20 | 76  | 52  | 0.264 | 0.333 | 0.444 | 0.778 | 39.60% | 0.14872798 | 0.10176125 | 0.03913894 |
| 137 | Ian Desmond        | Rangers      | 625 | 178 | 22 | 107 | 86  | 0.285 | 0.335 | 0.446 | 0.782 | 46.50% | 0.1712     | 0.1376     | 0.0352     |
| 138 | Franklin Gutierrez | Mariners     | 248 | 61  | 14 | 33  | 39  | 0.246 | 0.329 | 0.452 | 0.78  | 42.00% | 0.13306452 | 0.15725806 | 0.05645161 |
| 139 | Alex Bregman       | Astros       | 201 | 53  | 8  | 31  | 34  | 0.264 | 0.313 | 0.478 | 0.791 | 46.60% | 0.15422886 | 0.16915423 | 0.039801   |
| 140 | Jeffrey Marte      | Angels       | 258 | 65  | 15 | 38  | 44  | 0.252 | 0.31  | 0.481 | 0.79  | 46.10% | 0.14728682 | 0.17054264 | 0.05813953 |
| 141 | Martin Prado       | Marlins      | 600 | 183 | 8  | 70  | 75  | 0.305 | 0.359 | 0.417 | 0.775 | 39.80% | 0.11666667 | 0.125      | 0.01333333 |
| 142 | John Jaso          | Pirates      | 380 | 102 | 8  | 45  | 42  | 0.268 | 0.353 | 0.413 | 0.766 | 40.60% | 0.11842105 | 0.11052632 | 0.02105263 |
| 143 | Matt Holliday      | Cardinals    | 382 | 94  | 20 | 48  | 62  | 0.246 | 0.322 | 0.461 | 0.782 | 48.40% | 0.12565445 | 0.16230366 | 0.05235602 |
| 144 | Brandon Drury      | Diamondbacks | 461 | 130 | 16 | 59  | 53  | 0.282 | 0.329 | 0.458 | 0.786 | 44.90% | 0.12798265 | 0.11496746 | 0.03470716 |
| 145 | Rickie Weeks Jr.   | Diamondbacks | 180 | 43  | 9  | 29  | 27  | 0.239 | 0.327 | 0.45  | 0.777 | 41.50% | 0.16111111 | 0.15       | 0.05       |
| 146 | Cesar Hernandez    | Phillies     | 547 | 161 | 6  | 67  | 39  | 0.294 | 0.371 | 0.393 | 0.764 | 44.30% | 0.12248629 | 0.07129799 | 0.01096892 |
| 147 | Adam Frazier       | Pirates      | 146 | 44  | 2  | 21  | 11  | 0.301 | 0.356 | 0.411 | 0.767 | 50.20% | 0.14383562 | 0.07534247 | 0.01369863 |
| 148 | Adrian Gonzalez    | Dodgers      | 568 | 162 | 18 | 69  | 90  | 0.285 | 0.349 | 0.435 | 0.784 | 48.70% | 0.12147887 | 0.1584507  | 0.03169014 |
| 149 | Shin-Soo Choo      | Rangers      | 178 | 43  | 7  | 27  | 17  | 0.242 | 0.357 | 0.399 | 0.756 | 38.50% | 0.15168539 | 0.09550562 | 0.03932584 |
| 150 | David Freese       | Pirates      | 437 | 118 | 13 | 63  | 55  | 0.27  | 0.352 | 0.412 | 0.764 | 44.50% | 0.14416476 | 0.12585812 | 0.02974828 |

Chart 8

|     |                   |           |     |     |    |    |     |       |       |       |       |        |            |            |            |
|-----|-------------------|-----------|-----|-----|----|----|-----|-------|-------|-------|-------|--------|------------|------------|------------|
| 151 | Dansby Swanson    | Braves    | 129 | 39  | 3  | 20 | 17  | 0.302 | 0.361 | 0.442 | 0.803 | 45.20% | 0.15503876 | 0.13178295 | 0.02325581 |
| 152 | Miguel Sano       | Twins     | 437 | 103 | 25 | 57 | 66  | 0.236 | 0.319 | 0.462 | 0.781 | 41.00% | 0.13043478 | 0.15102975 | 0.05720824 |
| 153 | Matt Kemp         | ---       | 623 | 167 | 35 | 89 | 108 | 0.268 | 0.304 | 0.499 | 0.803 | 55.40% | 0.14285714 | 0.17335474 | 0.05617978 |
| 154 | J.T. Realmuto     | Marlins   | 509 | 154 | 11 | 60 | 48  | 0.303 | 0.343 | 0.428 | 0.771 | 48.10% | 0.11787819 | 0.09430255 | 0.021611   |
| 155 | Tommy La Stella   | Cubs      | 148 | 40  | 2  | 17 | 11  | 0.27  | 0.357 | 0.405 | 0.763 | 45.60% | 0.11486486 | 0.07432432 | 0.01351351 |
| 156 | Brad Miller       | Rays      | 548 | 133 | 30 | 73 | 81  | 0.243 | 0.304 | 0.482 | 0.786 | 49.10% | 0.13321168 | 0.14781022 | 0.05474453 |
| 157 | Jorge Soler       | Cubs      | 227 | 54  | 12 | 37 | 31  | 0.238 | 0.333 | 0.436 | 0.769 | 45.10% | 0.16299559 | 0.13656388 | 0.05286344 |
| 158 | Adam Duvall       | Reds      | 552 | 133 | 33 | 85 | 103 | 0.241 | 0.297 | 0.498 | 0.795 | 49.80% | 0.15398551 | 0.1865942  | 0.05978261 |
| 159 | Jarrett Parker    | Giants    | 127 | 30  | 5  | 22 | 14  | 0.236 | 0.358 | 0.394 | 0.751 | 46.70% | 0.17322835 | 0.11023622 | 0.03937008 |
| 160 | Daniel Descalso   | Rockies   | 250 | 66  | 8  | 38 | 38  | 0.264 | 0.349 | 0.424 | 0.773 | 40.40% | 0.152      | 0.152      | 0.032      |
| 161 | Gregory Polanco   | Pirates   | 527 | 136 | 22 | 79 | 86  | 0.258 | 0.323 | 0.463 | 0.786 | 46.20% | 0.14990512 | 0.16318786 | 0.04174573 |
| 162 | Nick Franklin     | Rays      | 174 | 47  | 6  | 18 | 26  | 0.27  | 0.328 | 0.443 | 0.771 | 49.30% | 0.10344828 | 0.14942529 | 0.03448276 |
| 163 | Jose Peraza       | Reds      | 241 | 78  | 3  | 25 | 25  | 0.324 | 0.352 | 0.411 | 0.762 | 51.10% | 0.10373444 | 0.10373444 | 0.01244813 |
| 164 | Albert Pujols     | Angels    | 593 | 159 | 31 | 71 | 119 | 0.268 | 0.323 | 0.457 | 0.78  | 46.20% | 0.11973019 | 0.20067454 | 0.05227656 |
| 165 | Steven Moya       | Tigers    | 94  | 24  | 5  | 9  | 11  | 0.255 | 0.29  | 0.5   | 0.79  | 58.00% | 0.09574468 | 0.11702128 | 0.05319149 |
| 166 | Seth Smith        | Mariners  | 378 | 94  | 16 | 62 | 63  | 0.249 | 0.342 | 0.415 | 0.758 | 39.60% | 0.16402116 | 0.16666667 | 0.04232804 |
| 167 | Matt Adams        | Cardinals | 297 | 74  | 16 | 37 | 54  | 0.249 | 0.309 | 0.471 | 0.78  | 50.90% | 0.12457912 | 0.18181818 | 0.05387205 |
| 168 | Marcell Ozuna     | Marlins   | 557 | 148 | 23 | 75 | 76  | 0.266 | 0.321 | 0.452 | 0.773 | 47.10% | 0.13464991 | 0.13644524 | 0.04129264 |
| 169 | Tommy Pham        | Cardinals | 159 | 36  | 9  | 26 | 17  | 0.226 | 0.324 | 0.44  | 0.764 | 41.50% | 0.16352201 | 0.10691824 | 0.05660377 |
| 170 | Justin Upton      | Tigers    | 570 | 140 | 31 | 81 | 87  | 0.246 | 0.31  | 0.465 | 0.775 | 44.10% | 0.14210526 | 0.15263158 | 0.05438596 |
| 171 | Jose Reyes        | Mets      | 255 | 68  | 8  | 45 | 24  | 0.267 | 0.326 | 0.443 | 0.769 | 45.10% | 0.17647059 | 0.09411765 | 0.03137255 |
| 172 | Brandon Moss      | Cardinals | 413 | 93  | 28 | 66 | 67  | 0.225 | 0.3   | 0.484 | 0.784 | 51.00% | 0.1598063  | 0.1622276  | 0.06779661 |
| 173 | Alex Avila        | White Sox | 169 | 36  | 7  | 19 | 11  | 0.213 | 0.359 | 0.373 | 0.732 | 36.80% | 0.11242604 | 0.06508876 | 0.04142012 |
| 174 | Andrew McCutchen  | Pirates   | 598 | 153 | 24 | 81 | 79  | 0.256 | 0.336 | 0.43  | 0.766 | 46.60% | 0.13545151 | 0.13210702 | 0.04013378 |
| 175 | Marlon Byrd       | Indians   | 115 | 31  | 5  | 11 | 19  | 0.27  | 0.326 | 0.452 | 0.778 | 57.00% | 0.09565217 | 0.16521739 | 0.04347826 |
| 176 | Scott Schebler    | Reds      | 257 | 68  | 9  | 36 | 40  | 0.265 | 0.33  | 0.432 | 0.762 | 51.80% | 0.14007782 | 0.15564202 | 0.03501946 |
| 177 | Jayson Werth      | Nationals | 525 | 128 | 21 | 84 | 69  | 0.244 | 0.335 | 0.417 | 0.752 | 38.20% | 0.16       | 0.13142857 | 0.04       |
| 178 | Joe Mauer         | Twins     | 494 | 129 | 11 | 68 | 49  | 0.261 | 0.363 | 0.389 | 0.752 | 35.80% | 0.13765182 | 0.09919028 | 0.02226721 |
| 179 | Brandon Crawford  | Giants    | 553 | 152 | 12 | 67 | 84  | 0.275 | 0.342 | 0.43  | 0.772 | 51.40% | 0.12115732 | 0.15189873 | 0.02169982 |
| 180 | Lonnie Chisenhall | Indians   | 385 | 110 | 8  | 43 | 57  | 0.286 | 0.328 | 0.439 | 0.767 | 57.00% | 0.11168831 | 0.14805195 | 0.02077922 |
| 181 | Yunel Escobar     | Angels    | 517 | 157 | 5  | 68 | 39  | 0.304 | 0.355 | 0.391 | 0.745 | 48.60% | 0.13152805 | 0.0754352  | 0.00967118 |
| 182 | Troy Tulowitzki   | Blue Jays | 492 | 125 | 24 | 54 | 79  | 0.254 | 0.318 | 0.443 | 0.761 | 44.50% | 0.1097561  | 0.16056911 | 0.04878049 |
| 183 | Eric Hosmer       | Royals    | 605 | 161 | 25 | 80 | 104 | 0.266 | 0.328 | 0.433 | 0.761 | 48.80% | 0.1322314  | 0.17190083 | 0.04132231 |
| 184 | Brian McCann      | Yankees   | 429 | 104 | 20 | 56 | 58  | 0.242 | 0.335 | 0.413 | 0.748 | 43.00% | 0.13053613 | 0.13519814 | 0.04662005 |
| 185 | Todd Frazier      | White Sox | 590 | 133 | 40 | 89 | 98  | 0.225 | 0.302 | 0.464 | 0.767 | 46.70% | 0.15084746 | 0.16610169 | 0.06779661 |
| 186 | Jorge Polanco     | Twins     | 245 | 69  | 4  | 24 | 27  | 0.282 | 0.332 | 0.424 | 0.757 | 42.70% | 0.09795918 | 0.11020408 | 0.01632653 |
| 187 | David Ross        | Cubs      | 166 | 38  | 10 | 24 | 32  | 0.229 | 0.338 | 0.446 | 0.784 | 47.00% | 0.14457831 | 0.19277108 | 0.06024096 |
| 188 | Albert Almora     | Cubs      | 112 | 31  | 3  | 14 | 14  | 0.277 | 0.308 | 0.455 | 0.763 | 50.80% | 0.125      | 0.125      | 0.02678571 |
| 189 | Randal Grichuk    | Cardinals | 446 | 107 | 24 | 66 | 68  | 0.24  | 0.289 | 0.48  | 0.769 | 53.80% | 0.14798206 | 0.15246637 | 0.05381166 |
| 190 | Nori Aoki         | Mariners  | 417 | 118 | 4  | 63 | 28  | 0.283 | 0.349 | 0.388 | 0.738 | 47.20% | 0.15107914 | 0.06714628 | 0.00959233 |
| 191 | Billy Butler      | ---       | 250 | 71  | 5  | 27 | 35  | 0.284 | 0.336 | 0.416 | 0.752 | 45.50% | 0.108      | 0.14       | 0.02       |
| 192 | Jeremy Hazelbaker | Cardinals | 200 | 47  | 12 | 35 | 28  | 0.235 | 0.295 | 0.48  | 0.775 | 51.00% | 0.175      | 0.14       | 0.06       |
| 193 | Angel Pagan       | Giants    | 495 | 137 | 12 | 71 | 55  | 0.277 | 0.331 | 0.418 | 0.75  | 40.50% | 0.14343434 | 0.11111111 | 0.02424242 |
| 194 | Eduardo Nunez     | ---       | 553 | 159 | 16 | 73 | 67  | 0.288 | 0.325 | 0.432 | 0.758 | 53.00% | 0.13200723 | 0.12115732 | 0.02893309 |
| 195 | Josh Reddick      | ---       | 398 | 112 | 10 | 53 | 37  | 0.281 | 0.345 | 0.405 | 0.749 | 44.20% | 0.13316583 | 0.09296482 | 0.02512563 |
| 196 | Nick Hundley      | Rockies   | 289 | 75  | 10 | 30 | 48  | 0.26  | 0.32  | 0.439 | 0.759 | 50.90% | 0.10380623 | 0.16608997 | 0.03460208 |
| 197 | Kevin Kiermaier   | Rays      | 366 | 90  | 12 | 55 | 37  | 0.246 | 0.331 | 0.41  | 0.741 | 43.40% | 0.15027322 | 0.1010929  | 0.03278689 |
| 198 | Lorenzo Cain      | Royals    | 397 | 114 | 9  | 56 | 56  | 0.287 | 0.339 | 0.408 | 0.747 | 47.90% | 0.14105793 | 0.14105793 | 0.02267003 |
| 199 | Russell Martin    | Blue Jays | 455 | 105 | 20 | 62 | 74  | 0.231 | 0.335 | 0.398 | 0.733 | 38.90% | 0.13626374 | 0.16263736 | 0.04395604 |
| 200 | Cameron Rupp      | Phillies  | 389 | 98  | 16 | 36 | 54  | 0.252 | 0.303 | 0.447 | 0.75  | 47.80% | 0.09254499 | 0.13881748 | 0.04113111 |



Chart 9

|     |                     |              |     |     |    |    |    |       |       |       |       |        |            |            |            |
|-----|---------------------|--------------|-----|-----|----|----|----|-------|-------|-------|-------|--------|------------|------------|------------|
| 201 | Carlos Ruiz         | ---          | 201 | 53  | 3  | 21 | 15 | 0.264 | 0.365 | 0.348 | 0.713 | 36.80% | 0.10447761 | 0.07462687 | 0.01492537 |
| 202 | Nick Markakis       | Braves       | 599 | 161 | 13 | 67 | 89 | 0.269 | 0.346 | 0.397 | 0.744 | 40.90% | 0.11185309 | 0.14858097 | 0.02170284 |
| 203 | Bruce Maxwell III   | Athletics    | 92  | 26  | 1  | 8  | 14 | 0.283 | 0.337 | 0.402 | 0.739 | 46.50% | 0.08695652 | 0.15217391 | 0.01086957 |
| 204 | Ichiro Suzuki       | Marlins      | 327 | 95  | 1  | 48 | 22 | 0.291 | 0.354 | 0.376 | 0.73  | 43.20% | 0.14678899 | 0.06727829 | 0.0030581  |
| 205 | Yasiel Puig         | Dodgers      | 334 | 88  | 11 | 45 | 45 | 0.263 | 0.323 | 0.416 | 0.74  | 51.80% | 0.13473054 | 0.13473054 | 0.03293413 |
| 206 | Jonathan Schoop     | Orioles      | 615 | 164 | 25 | 82 | 82 | 0.267 | 0.298 | 0.454 | 0.752 | 60.20% | 0.13333333 | 0.13333333 | 0.04065041 |
| 207 | Wellington Castillo | Diamondbacks | 416 | 110 | 14 | 41 | 68 | 0.264 | 0.322 | 0.423 | 0.745 | 43.80% | 0.09855769 | 0.16346154 | 0.03365385 |
| 208 | Jon Jay             | Padres       | 347 | 101 | 2  | 49 | 26 | 0.291 | 0.339 | 0.389 | 0.728 | 51.80% | 0.14121037 | 0.07492795 | 0.00576369 |
| 209 | Ender Inciarte      | Braves       | 522 | 152 | 3  | 85 | 29 | 0.291 | 0.351 | 0.381 | 0.732 | 46.10% | 0.16283525 | 0.05555556 | 0.00574713 |
| 210 | Didi Gregorius      | Yankees      | 562 | 155 | 20 | 68 | 70 | 0.276 | 0.304 | 0.447 | 0.751 | 55.40% | 0.12099644 | 0.12455516 | 0.03558719 |
| 211 | Corey Dickerson     | Rays         | 510 | 125 | 24 | 57 | 70 | 0.245 | 0.293 | 0.469 | 0.761 | 56.40% | 0.11176471 | 0.1372549  | 0.04705882 |
| 212 | Adam Jones          | Orioles      | 619 | 164 | 29 | 86 | 83 | 0.265 | 0.31  | 0.436 | 0.746 | 60.60% | 0.13893376 | 0.13408724 | 0.04684976 |
| 213 | Francisco Cervelli  | Pirates      | 326 | 86  | 1  | 42 | 33 | 0.264 | 0.377 | 0.322 | 0.699 | 38.10% | 0.12883436 | 0.10122699 | 0.00306748 |
| 214 | Nomar Mazara        | Rangers      | 516 | 137 | 20 | 59 | 64 | 0.266 | 0.32  | 0.419 | 0.739 | 44.70% | 0.11434109 | 0.12403101 | 0.03875969 |
| 215 | Dae-Ho Lee          | Mariners     | 292 | 74  | 14 | 33 | 49 | 0.253 | 0.312 | 0.428 | 0.74  | 47.50% | 0.1130137  | 0.16780822 | 0.04794521 |
| 216 | Trayce Thompson     | Dodgers      | 236 | 53  | 13 | 31 | 32 | 0.225 | 0.302 | 0.436 | 0.738 | 42.80% | 0.13135593 | 0.13559322 | 0.05508475 |
| 217 | Logan Morrison      | Rays         | 353 | 84  | 14 | 45 | 43 | 0.238 | 0.319 | 0.414 | 0.733 | 46.50% | 0.12747875 | 0.12181303 | 0.03966006 |
| 218 | Mac Williamson      | Giants       | 112 | 25  | 6  | 14 | 15 | 0.223 | 0.315 | 0.411 | 0.726 | 47.50% | 0.125      | 0.13392857 | 0.05357143 |
| 219 | Brett Gardner       | Yankees      | 547 | 143 | 7  | 80 | 41 | 0.261 | 0.351 | 0.362 | 0.713 | 36.80% | 0.14625229 | 0.0749543  | 0.01279707 |
| 220 | Ryan Rua            | Rangers      | 240 | 62  | 8  | 40 | 22 | 0.258 | 0.331 | 0.4   | 0.731 | 45.40% | 0.16666667 | 0.09166667 | 0.03333333 |
| 221 | Paulo Orlando       | Royals       | 457 | 138 | 5  | 52 | 43 | 0.302 | 0.329 | 0.405 | 0.734 | 55.90% | 0.11378556 | 0.0940919  | 0.01094092 |
| 222 | Jace Peterson       | Braves       | 350 | 89  | 7  | 45 | 29 | 0.254 | 0.35  | 0.366 | 0.715 | 40.80% | 0.12857143 | 0.08285714 | 0.02       |
| 223 | Addison Russell     | Cubs         | 525 | 125 | 21 | 67 | 95 | 0.238 | 0.321 | 0.417 | 0.738 | 50.10% | 0.12761905 | 0.18095238 | 0.04       |
| 224 | Eugenio Suarez      | Reds         | 565 | 140 | 21 | 78 | 70 | 0.248 | 0.317 | 0.411 | 0.728 | 43.40% | 0.1380531  | 0.12389381 | 0.03716814 |
| 225 | Jarrod Dyson        | Royals       | 299 | 83  | 1  | 46 | 25 | 0.278 | 0.34  | 0.388 | 0.728 | 44.20% | 0.15384615 | 0.08361204 | 0.00334448 |
| 226 | Cheslor Cuthbert    | Royals       | 475 | 130 | 12 | 49 | 46 | 0.274 | 0.318 | 0.413 | 0.731 | 49.20% | 0.10315789 | 0.09684211 | 0.02526316 |
| 227 | Javier Baez         | Cubs         | 421 | 115 | 14 | 50 | 59 | 0.273 | 0.314 | 0.423 | 0.737 | 52.60% | 0.11876485 | 0.14014252 | 0.03325416 |
| 228 | Tim Anderson        | White Sox    | 410 | 116 | 9  | 57 | 30 | 0.283 | 0.306 | 0.432 | 0.738 | 50.40% | 0.13902439 | 0.07317073 | 0.02195122 |
| 229 | Marcus Semien       | Athletics    | 568 | 135 | 27 | 72 | 75 | 0.238 | 0.3   | 0.435 | 0.735 | 45.60% | 0.12676056 | 0.13204225 | 0.04753521 |
| 230 | Brandon Phillips    | Reds         | 550 | 160 | 11 | 74 | 64 | 0.291 | 0.32  | 0.416 | 0.736 | 57.80% | 0.13454545 | 0.11636364 | 0.02       |
| 231 | Chris Heisey        | Nationals    | 139 | 30  | 9  | 18 | 17 | 0.216 | 0.29  | 0.446 | 0.736 | 41.40% | 0.1294964  | 0.12230216 | 0.0647482  |
| 232 | Scooter Gennett     | Brewers      | 498 | 131 | 14 | 58 | 56 | 0.263 | 0.317 | 0.412 | 0.728 | 50.50% | 0.11646586 | 0.1124498  | 0.02811245 |
| 233 | Tim Beckham         | Rays         | 198 | 49  | 5  | 25 | 16 | 0.247 | 0.3   | 0.434 | 0.735 | 49.10% | 0.12626263 | 0.08080808 | 0.02525253 |
| 234 | Conor Gillaspie     | Giants       | 191 | 50  | 6  | 24 | 25 | 0.262 | 0.307 | 0.44  | 0.747 | 54.50% | 0.12565445 | 0.13089005 | 0.03141361 |
| 235 | Kelby Tomlinson     | Giants       | 106 | 31  | 0  | 13 | 6  | 0.292 | 0.37  | 0.33  | 0.7   | 47.70% | 0.12264151 | 0.05660377 | 0          |
| 236 | Andres Blanco       | Phillies     | 190 | 48  | 4  | 26 | 21 | 0.253 | 0.316 | 0.405 | 0.721 | 53.10% | 0.13684211 | 0.11052632 | 0.02105263 |
| 237 | Max Kepler          | Twins        | 396 | 93  | 17 | 52 | 63 | 0.235 | 0.309 | 0.424 | 0.734 | 43.10% | 0.13131313 | 0.15909091 | 0.04292929 |
| 238 | Starlin Castro      | Yankees      | 577 | 156 | 21 | 63 | 70 | 0.27  | 0.3   | 0.433 | 0.734 | 51.70% | 0.10918544 | 0.12131716 | 0.03639515 |
| 239 | Tyler Saladino      | White Sox    | 298 | 84  | 8  | 33 | 38 | 0.282 | 0.315 | 0.409 | 0.725 | 48.20% | 0.11073826 | 0.12751678 | 0.02684564 |
| 240 | Kirk Nieuwenhuis    | Brewers      | 335 | 70  | 13 | 38 | 44 | 0.209 | 0.324 | 0.385 | 0.709 | 41.20% | 0.11343284 | 0.13134328 | 0.03880597 |
| 241 | Aaron Hill          | ---          | 378 | 99  | 10 | 48 | 38 | 0.262 | 0.336 | 0.378 | 0.714 | 42.20% | 0.12698413 | 0.1005291  | 0.02645503 |
| 242 | Zack Cozart         | Reds         | 464 | 117 | 16 | 67 | 50 | 0.252 | 0.308 | 0.425 | 0.732 | 47.00% | 0.14439655 | 0.10775862 | 0.03448276 |
| 243 | Tony Wolters        | Rockies      | 205 | 53  | 3  | 27 | 30 | 0.259 | 0.327 | 0.395 | 0.723 | 45.90% | 0.13170732 | 0.14634146 | 0.01463415 |
| 244 | Chase Utley         | Dodgers      | 512 | 129 | 14 | 79 | 52 | 0.252 | 0.319 | 0.396 | 0.716 | 40.20% | 0.15429688 | 0.1015625  | 0.02734375 |
| 245 | Hernan Perez        | Brewers      | 404 | 110 | 13 | 50 | 56 | 0.272 | 0.302 | 0.428 | 0.73  | 53.80% | 0.12376238 | 0.13861386 | 0.03217822 |
| 246 | Michael Conforto    | Mets         | 304 | 67  | 12 | 38 | 42 | 0.22  | 0.31  | 0.414 | 0.725 | 44.10% | 0.125      | 0.13815789 | 0.03947368 |
| 247 | Denard Span         | Giants       | 572 | 152 | 11 | 70 | 53 | 0.266 | 0.331 | 0.381 | 0.712 | 44.00% | 0.12237762 | 0.09265734 | 0.01923077 |
| 248 | Maikel Franco       | Phillies     | 581 | 148 | 25 | 67 | 88 | 0.255 | 0.306 | 0.427 | 0.733 | 52.10% | 0.11531842 | 0.15146299 | 0.04302926 |
| 249 | Brett Lawrie        | White Sox    | 351 | 87  | 12 | 35 | 36 | 0.248 | 0.31  | 0.413 | 0.723 | 47.30% | 0.0997151  | 0.1025641  | 0.03418803 |
| 250 | Justin Morneau      | White Sox    | 203 | 53  | 6  | 16 | 25 | 0.261 | 0.303 | 0.429 | 0.731 | 55.40% | 0.07881773 | 0.12315271 | 0.02955665 |



Chart 10

|     |                   |              |     |     |    |    |    |       |       |       |       |        |            |            |            |
|-----|-------------------|--------------|-----|-----|----|----|----|-------|-------|-------|-------|--------|------------|------------|------------|
| 251 | Chris Owings      | Diamondbacks | 437 | 121 | 5  | 52 | 49 | 0.277 | 0.315 | 0.416 | 0.731 | 51.70% | 0.11899314 | 0.11212815 | 0.01144165 |
| 252 | Chase Headley     | Yankees      | 467 | 117 | 14 | 58 | 51 | 0.251 | 0.329 | 0.383 | 0.712 | 44.00% | 0.124197   | 0.10920771 | 0.02997859 |
| 253 | Trevor Plouffe    | Twins        | 319 | 83  | 12 | 35 | 47 | 0.26  | 0.303 | 0.42  | 0.723 | 45.20% | 0.10971787 | 0.14733542 | 0.03761755 |
| 254 | Travis Shaw       | Red Sox      | 480 | 116 | 16 | 63 | 71 | 0.242 | 0.306 | 0.421 | 0.726 | 48.00% | 0.13125    | 0.14791667 | 0.03333333 |
| 255 | Whit Merrifield   | Royals       | 311 | 88  | 2  | 44 | 29 | 0.283 | 0.323 | 0.392 | 0.716 | 47.60% | 0.1414791  | 0.09324759 | 0.00643087 |
| 256 | Justin Smoak      | Blue Jays    | 299 | 65  | 14 | 33 | 34 | 0.217 | 0.314 | 0.391 | 0.705 | 45.30% | 0.11036789 | 0.11371237 | 0.04682274 |
| 257 | Ryan Raburn       | Rockies      | 223 | 49  | 9  | 30 | 30 | 0.22  | 0.309 | 0.404 | 0.712 | 45.80% | 0.13452915 | 0.13452915 | 0.04035874 |
| 258 | Jacoby Ellsbury   | Yankees      | 551 | 145 | 9  | 71 | 56 | 0.263 | 0.33  | 0.374 | 0.703 | 46.00% | 0.12885662 | 0.10163339 | 0.01633394 |
| 259 | Steven Souza Jr.  | Rays         | 430 | 106 | 17 | 58 | 49 | 0.247 | 0.303 | 0.409 | 0.713 | 49.70% | 0.13488372 | 0.11395349 | 0.03953488 |
| 260 | Brock Holt        | Red Sox      | 290 | 74  | 7  | 45 | 34 | 0.255 | 0.322 | 0.383 | 0.705 | 38.40% | 0.15517241 | 0.11724138 | 0.02413793 |
| 261 | Adonis Garcia     | Braves       | 532 | 145 | 14 | 65 | 65 | 0.273 | 0.311 | 0.406 | 0.717 | 52.80% | 0.12218045 | 0.12218045 | 0.02631579 |
| 262 | Teoscar Hernandez | Astros       | 100 | 23  | 4  | 15 | 11 | 0.23  | 0.304 | 0.42  | 0.724 | 42.20% | 0.15       | 0.11       | 0.04       |
| 263 | David Peralta     | Diamondbacks | 171 | 43  | 4  | 23 | 15 | 0.251 | 0.295 | 0.433 | 0.728 | 52.00% | 0.13450292 | 0.0877193  | 0.02339181 |
| 264 | Jhonny Peralta    | Cardinals    | 289 | 75  | 8  | 37 | 29 | 0.26  | 0.307 | 0.408 | 0.715 | 46.20% | 0.12802768 | 0.10034602 | 0.02768166 |
| 265 | Salvador Perez    | Royals       | 514 | 127 | 22 | 57 | 64 | 0.247 | 0.288 | 0.438 | 0.725 | 55.20% | 0.11089494 | 0.12451362 | 0.04280156 |
| 266 | Mitch Moreland    | Rangers      | 460 | 107 | 22 | 49 | 60 | 0.233 | 0.298 | 0.422 | 0.72  | 48.90% | 0.10652174 | 0.13043478 | 0.04782609 |
| 267 | J.J. Hardy        | Orioles      | 405 | 109 | 9  | 43 | 48 | 0.269 | 0.309 | 0.407 | 0.716 | 36.40% | 0.10617284 | 0.11851852 | 0.02222222 |
| 268 | Matt Wieters      | Orioles      | 423 | 103 | 17 | 48 | 66 | 0.243 | 0.302 | 0.409 | 0.711 | 50.90% | 0.11347518 | 0.15602837 | 0.04018913 |
| 269 | Juan Centeno      | Twins        | 176 | 46  | 3  | 16 | 25 | 0.261 | 0.312 | 0.392 | 0.704 | 46.70% | 0.09090909 | 0.14204545 | 0.01704545 |
| 270 | Matt Szczur       | Cubs         | 185 | 48  | 5  | 30 | 24 | 0.259 | 0.312 | 0.4   | 0.712 | 52.50% | 0.16216216 | 0.12972973 | 0.02702703 |
| 271 | Stephen Vogt      | Athletics    | 490 | 123 | 14 | 54 | 56 | 0.251 | 0.305 | 0.406 | 0.711 | 45.40% | 0.11020408 | 0.11428571 | 0.02857143 |
| 272 | Joey Rickard      | Orioles      | 257 | 69  | 5  | 32 | 19 | 0.268 | 0.319 | 0.377 | 0.696 | 41.00% | 0.12451362 | 0.07392996 | 0.01945525 |
| 273 | Omar Narvaez      | White Sox    | 101 | 27  | 1  | 13 | 10 | 0.267 | 0.35  | 0.337 | 0.687 | 47.80% | 0.12871287 | 0.0990099  | 0.00990099 |
| 274 | Adam Lind         | Mariners     | 401 | 96  | 20 | 48 | 58 | 0.239 | 0.286 | 0.431 | 0.717 | 47.90% | 0.11970075 | 0.1446384  | 0.04987531 |
| 275 | Lucas Duda        | Mets         | 153 | 35  | 7  | 20 | 23 | 0.229 | 0.302 | 0.412 | 0.714 | 41.30% | 0.13071895 | 0.1503268  | 0.04575163 |
| 276 | Eddie Rosario     | Twins        | 335 | 90  | 10 | 52 | 32 | 0.269 | 0.295 | 0.421 | 0.716 | 56.90% | 0.15522388 | 0.09552239 | 0.02985075 |
| 277 | Byron Buxton      | Twins        | 298 | 67  | 10 | 44 | 38 | 0.225 | 0.284 | 0.43  | 0.714 | 46.70% | 0.14765101 | 0.12751678 | 0.03355705 |
| 278 | Jordy Mercer      | Pirates      | 519 | 133 | 11 | 66 | 59 | 0.256 | 0.328 | 0.374 | 0.701 | 43.80% | 0.12716763 | 0.11368015 | 0.02119461 |
| 279 | Howie Kendrick    | Dodgers      | 487 | 124 | 8  | 65 | 40 | 0.255 | 0.326 | 0.366 | 0.691 | 48.10% | 0.13347023 | 0.08213552 | 0.0164271  |
| 280 | Guillermo Heredia | Mariners     | 92  | 23  | 1  | 12 | 12 | 0.25  | 0.349 | 0.315 | 0.664 | 39.40% | 0.13043478 | 0.13043478 | 0.01086957 |
| 281 | Mitch Haniger     | Diamondbacks | 109 | 25  | 5  | 9  | 17 | 0.229 | 0.309 | 0.404 | 0.713 | 43.70% | 0.08256881 | 0.1559633  | 0.04587156 |
| 282 | Kurt Suzuki       | Twins        | 345 | 89  | 8  | 34 | 49 | 0.258 | 0.301 | 0.403 | 0.704 | 48.00% | 0.09855072 | 0.14202899 | 0.02318841 |
| 283 | Darwin Barney     | Blue Jays    | 279 | 75  | 4  | 35 | 19 | 0.269 | 0.322 | 0.373 | 0.695 | 48.70% | 0.12544803 | 0.06810036 | 0.01433692 |
| 284 | Alex Gordon       | Royals       | 445 | 98  | 17 | 62 | 40 | 0.22  | 0.312 | 0.38  | 0.692 | 43.70% | 0.13932584 | 0.08988764 | 0.03820225 |
| 285 | Phil Gosselin     | Diamondbacks | 220 | 61  | 2  | 26 | 13 | 0.277 | 0.324 | 0.368 | 0.692 | 42.50% | 0.11818182 | 0.05909091 | 0.00909091 |
| 286 | James Loney       | Mets         | 343 | 91  | 9  | 30 | 34 | 0.265 | 0.307 | 0.397 | 0.703 | 50.80% | 0.08746356 | 0.09912536 | 0.02623907 |
| 287 | Rajai Davis       | Indians      | 454 | 113 | 12 | 74 | 48 | 0.249 | 0.306 | 0.388 | 0.693 | 51.40% | 0.16299559 | 0.10572687 | 0.02643172 |
| 288 | Avisail Garcia    | White Sox    | 413 | 101 | 12 | 59 | 51 | 0.245 | 0.307 | 0.385 | 0.692 | 54.80% | 0.14285714 | 0.12348668 | 0.02905569 |
| 289 | Andrelton Simmon  | Angels       | 448 | 126 | 4  | 48 | 44 | 0.281 | 0.324 | 0.366 | 0.69  | 47.50% | 0.10714286 | 0.09821429 | 0.00892857 |
| 290 | Coco Crisp        | ---          | 446 | 103 | 13 | 54 | 55 | 0.231 | 0.302 | 0.397 | 0.698 | 42.40% | 0.12107623 | 0.12331839 | 0.02914798 |
| 291 | Kelly Johnson     | ---          | 304 | 75  | 10 | 25 | 34 | 0.247 | 0.306 | 0.391 | 0.698 | 47.60% | 0.08223684 | 0.11184211 | 0.03289474 |
| 292 | Jose Lobaton      | Nationals    | 99  | 23  | 3  | 10 | 8  | 0.232 | 0.319 | 0.374 | 0.692 | 53.40% | 0.1010101  | 0.08080808 | 0.03030303 |
| 293 | Ezequiel Carrera  | Blue Jays    | 270 | 67  | 6  | 47 | 23 | 0.248 | 0.323 | 0.356 | 0.679 | 42.50% | 0.17407407 | 0.08518519 | 0.02222222 |
| 294 | Jason Castro      | Astros       | 329 | 69  | 11 | 41 | 32 | 0.21  | 0.307 | 0.377 | 0.684 | 43.90% | 0.12462006 | 0.09726444 | 0.03343465 |
| 295 | Josh Harrison     | Pirates      | 487 | 138 | 4  | 57 | 59 | 0.283 | 0.311 | 0.388 | 0.699 | 54.30% | 0.11704312 | 0.1211499  | 0.00821355 |
| 296 | Tucker Barnhart   | Reds         | 377 | 97  | 7  | 34 | 51 | 0.257 | 0.323 | 0.379 | 0.702 | 47.60% | 0.09018568 | 0.13527851 | 0.01856764 |
| 297 | Joe Panik         | Giants       | 464 | 111 | 10 | 67 | 62 | 0.239 | 0.315 | 0.379 | 0.695 | 41.70% | 0.14439655 | 0.13362069 | 0.02155172 |
| 298 | Kolten Wong       | Cardinals    | 313 | 75  | 5  | 39 | 23 | 0.24  | 0.327 | 0.355 | 0.682 | 46.80% | 0.12460064 | 0.07348243 | 0.01597444 |
| 299 | Mallex Smith      | Braves       | 189 | 45  | 3  | 28 | 22 | 0.238 | 0.316 | 0.365 | 0.681 | 44.40% | 0.14814815 | 0.11640212 | 0.01587302 |
| 300 | Tyler Collins     | Tigers       | 136 | 32  | 4  | 14 | 15 | 0.235 | 0.305 | 0.382 | 0.687 | 46.90% | 0.10294118 | 0.11029412 | 0.02941176 |

Chart 11

|     |                   |           |     |     |    |    |    |       |       |       |       |        |            |            |            |
|-----|-------------------|-----------|-----|-----|----|----|----|-------|-------|-------|-------|--------|------------|------------|------------|
| 301 | Yonder Alonso     | Athletics | 482 | 122 | 7  | 52 | 56 | 0.253 | 0.316 | 0.367 | 0.683 | 46.40% | 0.10788382 | 0.11618257 | 0.01452282 |
| 302 | Miguel Montero    | Cubs      | 241 | 52  | 8  | 33 | 33 | 0.216 | 0.327 | 0.357 | 0.684 | 50.20% | 0.13692946 | 0.13692946 | 0.03319502 |
| 303 | Michael Bourn     | ---       | 375 | 99  | 5  | 48 | 38 | 0.264 | 0.314 | 0.371 | 0.684 | 41.20% | 0.128      | 0.10133333 | 0.01333333 |
| 304 | Marwin Gonzalez   | Astros    | 484 | 123 | 13 | 55 | 51 | 0.254 | 0.293 | 0.401 | 0.694 | 48.40% | 0.11363636 | 0.1053719  | 0.0268595  |
| 305 | Leonys Martin     | Mariners  | 518 | 128 | 15 | 72 | 47 | 0.247 | 0.306 | 0.378 | 0.684 | 49.20% | 0.13899614 | 0.09073359 | 0.02895753 |
| 306 | Ryan Howard       | Phillies  | 331 | 65  | 25 | 35 | 59 | 0.196 | 0.257 | 0.453 | 0.71  | 55.20% | 0.10574018 | 0.17824773 | 0.0755287  |
| 307 | Melvin Upton Jr.  | ---       | 492 | 117 | 20 | 64 | 61 | 0.238 | 0.291 | 0.402 | 0.693 | 50.10% | 0.1300813  | 0.12398374 | 0.04065041 |
| 308 | Carlos Gomez      | ---       | 411 | 95  | 13 | 45 | 53 | 0.231 | 0.298 | 0.384 | 0.682 | 52.30% | 0.10948905 | 0.12895377 | 0.03163017 |
| 309 | Jurickson Profar  | Rangers   | 272 | 65  | 5  | 35 | 20 | 0.239 | 0.321 | 0.338 | 0.66  | 41.40% | 0.12867647 | 0.07352941 | 0.01838235 |
| 310 | Kevin Pillar      | Blue Jays | 548 | 146 | 7  | 59 | 53 | 0.266 | 0.303 | 0.376 | 0.679 | 48.90% | 0.10766423 | 0.09671533 | 0.01277372 |
| 311 | Ronald Torreyes   | Yankees   | 155 | 40  | 1  | 20 | 12 | 0.258 | 0.305 | 0.374 | 0.68  | 51.10% | 0.12903226 | 0.07741935 | 0.00645161 |
| 312 | Abraham Almonte   | Indians   | 182 | 48  | 1  | 24 | 22 | 0.264 | 0.294 | 0.401 | 0.695 | 51.90% | 0.13186813 | 0.12087912 | 0.00549451 |
| 313 | Byung-ho Park     | Twins     | 215 | 41  | 12 | 28 | 24 | 0.191 | 0.275 | 0.409 | 0.684 | 45.90% | 0.13023256 | 0.11162791 | 0.05581395 |
| 314 | Billy Hamilton    | Reds      | 411 | 107 | 3  | 69 | 17 | 0.26  | 0.321 | 0.343 | 0.664 | 44.00% | 0.16788321 | 0.04136253 | 0.00729927 |
| 315 | Juan Lagares      | Mets      | 142 | 34  | 3  | 15 | 9  | 0.239 | 0.301 | 0.38  | 0.682 | 43.30% | 0.1056338  | 0.06338028 | 0.02112676 |
| 316 | Danny Espinosa    | Nationals | 516 | 108 | 24 | 66 | 72 | 0.209 | 0.306 | 0.378 | 0.684 | 48.60% | 0.12790698 | 0.13953488 | 0.04651163 |
| 317 | Martin Maldonado  | Brewers   | 208 | 42  | 8  | 21 | 21 | 0.202 | 0.332 | 0.351 | 0.683 | 39.90% | 0.10096154 | 0.10096154 | 0.03846154 |
| 318 | Eric Fryer        | ---       | 116 | 31  | 0  | 19 | 13 | 0.267 | 0.336 | 0.319 | 0.655 | 45.30% | 0.1637931  | 0.11206897 | 0          |
| 319 | Travis Jankowski  | Padres    | 335 | 82  | 2  | 53 | 12 | 0.245 | 0.332 | 0.313 | 0.646 | 39.00% | 0.15820896 | 0.0358209  | 0.00597015 |
| 320 | Matt Duffy        | ---       | 333 | 86  | 5  | 41 | 28 | 0.258 | 0.31  | 0.357 | 0.668 | 45.40% | 0.12312312 | 0.08408408 | 0.01501502 |
| 321 | Yulieski Gurriel  | Astros    | 130 | 34  | 3  | 13 | 15 | 0.262 | 0.292 | 0.385 | 0.677 | 55.40% | 0.1        | 0.11538462 | 0.02307692 |
| 322 | Nolan Reimold     | Orioles   | 203 | 45  | 6  | 25 | 15 | 0.222 | 0.3   | 0.365 | 0.664 | 41.40% | 0.12315271 | 0.07389163 | 0.02955665 |
| 323 | Austin Jackson    | White Sox | 181 | 46  | 0  | 24 | 18 | 0.254 | 0.318 | 0.343 | 0.661 | 43.50% | 0.13259669 | 0.09944751 | 0          |
| 324 | Peter Bourjos     | Phillies  | 355 | 89  | 5  | 40 | 23 | 0.251 | 0.292 | 0.389 | 0.681 | 53.60% | 0.11267606 | 0.06478873 | 0.01408451 |
| 325 | Jeff Francoeur    | ---       | 307 | 78  | 7  | 33 | 34 | 0.254 | 0.297 | 0.378 | 0.675 | 56.70% | 0.10749186 | 0.11074919 | 0.0228013  |
| 326 | Jett Bandy        | Angels    | 209 | 49  | 8  | 23 | 25 | 0.234 | 0.281 | 0.392 | 0.673 | 56.80% | 0.11004785 | 0.11961722 | 0.03827751 |
| 327 | Chase d'Arnaud    | Braves    | 233 | 57  | 1  | 24 | 21 | 0.245 | 0.317 | 0.335 | 0.652 | 44.20% | 0.10300429 | 0.09012876 | 0.00429185 |
| 328 | Tyler White       | Astros    | 249 | 54  | 8  | 24 | 28 | 0.217 | 0.286 | 0.378 | 0.664 | 42.80% | 0.09638554 | 0.1124498  | 0.03212851 |
| 329 | Mark Teixeira     | Yankees   | 387 | 79  | 15 | 43 | 44 | 0.204 | 0.292 | 0.362 | 0.654 | 42.70% | 0.11111111 | 0.11369509 | 0.03875969 |
| 330 | Johnny Giavotella | Angels    | 346 | 90  | 6  | 44 | 31 | 0.26  | 0.287 | 0.376 | 0.662 | 48.00% | 0.12716763 | 0.08959538 | 0.01734104 |
| 331 | Gerardo Parra     | Rockies   | 368 | 93  | 7  | 45 | 39 | 0.253 | 0.271 | 0.399 | 0.671 | 54.80% | 0.12228261 | 0.10597826 | 0.01902174 |
| 332 | Freddy Galvis     | Phillies  | 584 | 141 | 20 | 61 | 67 | 0.241 | 0.274 | 0.399 | 0.673 | 52.70% | 0.10445205 | 0.11472603 | 0.03424658 |
| 333 | Jake Smolinski    | Athletics | 290 | 69  | 7  | 28 | 27 | 0.238 | 0.299 | 0.345 | 0.644 | 47.50% | 0.09655172 | 0.09310345 | 0.02413793 |
| 334 | Tyler Holt        | Reds      | 179 | 42  | 0  | 21 | 13 | 0.235 | 0.327 | 0.296 | 0.623 | 43.30% | 0.11731844 | 0.0726257  | 0          |
| 335 | Michael Taylor    | Nationals | 221 | 51  | 7  | 28 | 16 | 0.231 | 0.278 | 0.376 | 0.654 | 48.50% | 0.12669683 | 0.07239819 | 0.03167421 |
| 336 | Jose Iglesias     | Tigers    | 467 | 119 | 4  | 57 | 32 | 0.255 | 0.306 | 0.336 | 0.643 | 44.10% | 0.12205567 | 0.06852248 | 0.00856531 |
| 337 | Chris Iannetta    | Mariners  | 295 | 62  | 7  | 23 | 24 | 0.21  | 0.303 | 0.329 | 0.631 | 45.50% | 0.0779661  | 0.08135593 | 0.02372881 |
| 338 | Jed Lowrie        | Athletics | 338 | 89  | 2  | 30 | 27 | 0.263 | 0.314 | 0.322 | 0.637 | 46.30% | 0.0887574  | 0.07988166 | 0.00591716 |
| 339 | Trevor Brown      | Giants    | 173 | 41  | 5  | 17 | 19 | 0.237 | 0.283 | 0.364 | 0.647 | 49.50% | 0.0982659  | 0.10982659 | 0.02890173 |
| 340 | Gregorio Petit    | Angels    | 204 | 50  | 2  | 21 | 17 | 0.245 | 0.299 | 0.348 | 0.647 | 50.70% | 0.10294118 | 0.08333333 | 0.00980392 |
| 341 | Jason Heyward     | Cubs      | 530 | 122 | 7  | 61 | 49 | 0.23  | 0.306 | 0.325 | 0.631 | 41.30% | 0.11509434 | 0.09245283 | 0.01320755 |
| 342 | Colby Rasmus      | Astros    | 369 | 76  | 15 | 38 | 54 | 0.206 | 0.286 | 0.355 | 0.641 | 46.70% | 0.10298103 | 0.14634146 | 0.04065041 |
| 343 | Rob Refsnyder     | Yankees   | 152 | 38  | 0  | 25 | 12 | 0.25  | 0.328 | 0.309 | 0.637 | 42.00% | 0.16447368 | 0.07894737 | 0          |
| 344 | Gordon Beckham    | ---       | 245 | 52  | 5  | 25 | 31 | 0.212 | 0.294 | 0.347 | 0.641 | 43.00% | 0.10204082 | 0.12653061 | 0.02040816 |
| 345 | Clint Robinson    | Nationals | 197 | 46  | 5  | 16 | 26 | 0.234 | 0.304 | 0.33  | 0.634 | 42.90% | 0.08121827 | 0.1319797  | 0.02538071 |
| 346 | Brett Wallace     | Padres    | 217 | 41  | 6  | 19 | 20 | 0.189 | 0.309 | 0.318 | 0.627 | 41.90% | 0.0875576  | 0.0921659  | 0.02764977 |
| 347 | Dee Gordon        | Marlins   | 325 | 87  | 1  | 47 | 14 | 0.268 | 0.305 | 0.335 | 0.641 | 48.70% | 0.14461538 | 0.04307692 | 0.00307692 |
| 348 | Andrew Romine     | Tigers    | 174 | 41  | 2  | 21 | 16 | 0.236 | 0.304 | 0.322 | 0.626 | 55.50% | 0.12068966 | 0.09195402 | 0.01149425 |
| 349 | Luis Sardinas     | ---       | 180 | 44  | 4  | 25 | 18 | 0.244 | 0.295 | 0.356 | 0.651 | 50.50% | 0.13888889 | 0.1        | 0.02222222 |
| 350 | Travis d'Arnaud   | Mets      | 251 | 62  | 4  | 27 | 15 | 0.247 | 0.307 | 0.323 | 0.629 | 46.00% | 0.10756972 | 0.05976096 | 0.01593625 |



Chart 12

|     |                    |           |     |     |    |    |    |       |       |       |       |        |            |            |            |
|-----|--------------------|-----------|-----|-----|----|----|----|-------|-------|-------|-------|--------|------------|------------|------------|
| 351 | Cody Asche         | Phillies  | 197 | 42  | 4  | 22 | 18 | 0.213 | 0.284 | 0.35  | 0.635 | 44.50% | 0.11167513 | 0.09137056 | 0.02030457 |
| 352 | Desmond Jennings   | Rays      | 200 | 40  | 7  | 22 | 20 | 0.2   | 0.281 | 0.35  | 0.631 | 42.70% | 0.11       | 0.1        | 0.035      |
| 353 | Alcides Escobar    | Royals    | 637 | 166 | 7  | 57 | 55 | 0.261 | 0.292 | 0.35  | 0.642 | 52.90% | 0.08948195 | 0.08634223 | 0.01098901 |
| 354 | Bryan Holaday      | ---       | 117 | 27  | 2  | 17 | 14 | 0.231 | 0.281 | 0.359 | 0.64  | 51.60% | 0.14529915 | 0.11965812 | 0.01709402 |
| 355 | Anthony Gose       | Tigers    | 91  | 19  | 2  | 11 | 7  | 0.209 | 0.287 | 0.341 | 0.628 | 40.90% | 0.12087912 | 0.07692308 | 0.02197802 |
| 356 | Jarrod Saltalamacc | Tigers    | 246 | 42  | 12 | 30 | 38 | 0.171 | 0.284 | 0.346 | 0.63  | 44.00% | 0.12195122 | 0.15447154 | 0.04878049 |
| 357 | Oswaldo Arcia      | ---       | 202 | 41  | 8  | 17 | 23 | 0.203 | 0.27  | 0.366 | 0.637 | 49.50% | 0.08415842 | 0.11386139 | 0.03960396 |
| 358 | Ivan De Jesus      | Reds      | 221 | 56  | 1  | 21 | 20 | 0.253 | 0.311 | 0.312 | 0.623 | 45.10% | 0.09502262 | 0.09049774 | 0.00452489 |
| 359 | Ryan Zimmerman     | Nationals | 427 | 93  | 15 | 60 | 46 | 0.218 | 0.272 | 0.37  | 0.642 | 43.70% | 0.14051522 | 0.10772834 | 0.03512881 |
| 360 | Jimmy Rollins      | White Sox | 149 | 33  | 2  | 25 | 8  | 0.221 | 0.295 | 0.329 | 0.624 | 43.70% | 0.16778523 | 0.05369128 | 0.01342282 |
| 361 | Prince Fielder     | Rangers   | 326 | 69  | 8  | 29 | 44 | 0.212 | 0.292 | 0.334 | 0.626 | 45.00% | 0.08895706 | 0.13496933 | 0.02453988 |
| 362 | Alejandro De Aza   | Mets      | 234 | 48  | 6  | 31 | 25 | 0.205 | 0.297 | 0.321 | 0.618 | 43.00% | 0.13247863 | 0.10683761 | 0.02564103 |
| 363 | Shawn O'Malley     | Mariners  | 210 | 48  | 2  | 24 | 17 | 0.229 | 0.299 | 0.319 | 0.618 | 43.90% | 0.11428571 | 0.08095238 | 0.00952381 |
| 364 | Tony Kemp          | Astros    | 120 | 26  | 1  | 15 | 7  | 0.217 | 0.296 | 0.325 | 0.621 | 45.00% | 0.125      | 0.05833333 | 0.00833333 |
| 365 | Austin Romine      | Yankees   | 165 | 40  | 4  | 17 | 26 | 0.242 | 0.269 | 0.382 | 0.65  | 55.10% | 0.1030303  | 0.15757576 | 0.02424242 |
| 366 | Orlando Arcia      | Brewers   | 201 | 44  | 4  | 21 | 17 | 0.219 | 0.273 | 0.358 | 0.631 | 52.80% | 0.10447761 | 0.08457711 | 0.0199005  |
| 367 | Cristhian Adames   | Rockies   | 225 | 49  | 2  | 25 | 17 | 0.218 | 0.304 | 0.302 | 0.607 | 46.70% | 0.11111111 | 0.07555556 | 0.00888889 |
| 368 | James McCann       | Tigers    | 344 | 76  | 12 | 31 | 48 | 0.221 | 0.272 | 0.358 | 0.629 | 46.20% | 0.09011628 | 0.13953488 | 0.03488372 |
| 369 | Rene Rivera        | Mets      | 185 | 41  | 6  | 12 | 26 | 0.222 | 0.291 | 0.341 | 0.632 | 52.60% | 0.06486486 | 0.14054054 | 0.03243243 |
| 370 | Christian Bethanco | Padres    | 193 | 44  | 6  | 20 | 25 | 0.228 | 0.265 | 0.368 | 0.633 | 57.00% | 0.10362694 | 0.12953368 | 0.03108808 |
| 371 | Gregor Blanco      | Giants    | 241 | 54  | 1  | 28 | 18 | 0.224 | 0.309 | 0.311 | 0.62  | 42.60% | 0.11618257 | 0.07468888 | 0.00414938 |
| 372 | Ramon Cabrera      | Reds      | 171 | 42  | 3  | 11 | 23 | 0.246 | 0.279 | 0.357 | 0.635 | 49.80% | 0.06432749 | 0.13450292 | 0.01754386 |
| 373 | Chris Stewart      | Pirates   | 98  | 21  | 1  | 10 | 7  | 0.214 | 0.319 | 0.286 | 0.604 | 33.60% | 0.10204082 | 0.07142857 | 0.01020408 |
| 374 | Erick Aybar        | ---       | 415 | 101 | 3  | 34 | 34 | 0.243 | 0.303 | 0.32  | 0.623 | 49.80% | 0.08192771 | 0.08192771 | 0.00722892 |
| 375 | Bobby Wilson       | ---       | 228 | 54  | 7  | 25 | 33 | 0.237 | 0.27  | 0.355 | 0.626 | 54.30% | 0.10964912 | 0.14473684 | 0.03070175 |
| 376 | Aaron Hicks        | Yankees   | 327 | 71  | 8  | 32 | 31 | 0.217 | 0.281 | 0.336 | 0.617 | 45.40% | 0.09785933 | 0.09480122 | 0.02446483 |
| 377 | Aaron Altherr      | Phillies  | 198 | 40  | 4  | 23 | 23 | 0.202 | 0.304 | 0.293 | 0.597 | 43.20% | 0.11616162 | 0.11616162 | 0.02020202 |
| 378 | KikÃ© Hernandez    | Dodgers   | 216 | 41  | 7  | 25 | 18 | 0.19  | 0.283 | 0.324 | 0.607 | 44.50% | 0.11574074 | 0.08333333 | 0.03240741 |
| 379 | Ryan Flaherty      | Orioles   | 157 | 34  | 3  | 16 | 15 | 0.217 | 0.291 | 0.318 | 0.61  | 44.30% | 0.10191083 | 0.09554414 | 0.01910828 |
| 380 | Eduardo Escobar    | Twins     | 352 | 83  | 6  | 32 | 37 | 0.236 | 0.28  | 0.338 | 0.618 | 50.30% | 0.09090909 | 0.10511364 | 0.01704545 |
| 381 | Chris Coghlan      | ---       | 261 | 49  | 6  | 35 | 30 | 0.188 | 0.29  | 0.318 | 0.608 | 43.70% | 0.13409962 | 0.11494253 | 0.02298851 |
| 382 | Curt Casali        | Rays      | 226 | 42  | 8  | 23 | 25 | 0.186 | 0.273 | 0.336 | 0.609 | 44.40% | 0.10176991 | 0.11061947 | 0.03539823 |
| 383 | Brett Eibner       | ---       | 187 | 36  | 6  | 21 | 22 | 0.193 | 0.266 | 0.353 | 0.619 | 48.10% | 0.11229947 | 0.11764706 | 0.03208556 |
| 384 | Ji-Man Choi        | Angels    | 112 | 19  | 5  | 9  | 12 | 0.17  | 0.271 | 0.339 | 0.611 | 40.70% | 0.08035714 | 0.10714286 | 0.04464286 |
| 385 | Scott Van Slyke    | Dodgers   | 102 | 23  | 1  | 10 | 7  | 0.225 | 0.292 | 0.314 | 0.606 | 47.90% | 0.09803922 | 0.06862745 | 0.00980392 |
| 386 | Chris Johnson      | Marlins   | 243 | 54  | 5  | 20 | 24 | 0.222 | 0.281 | 0.329 | 0.611 | 48.30% | 0.08230453 | 0.09876543 | 0.02057613 |
| 387 | A.J. Ellis         | ---       | 171 | 37  | 2  | 11 | 22 | 0.216 | 0.301 | 0.298 | 0.599 | 38.30% | 0.06432749 | 0.12865497 | 0.01169591 |
| 388 | Ketel Marte        | Mariners  | 437 | 113 | 1  | 55 | 33 | 0.259 | 0.287 | 0.323 | 0.61  | 47.90% | 0.12585812 | 0.07551487 | 0.00228833 |
| 389 | Jimmy Paredes      | ---       | 158 | 35  | 5  | 15 | 19 | 0.222 | 0.253 | 0.367 | 0.62  | 56.30% | 0.09493671 | 0.12025316 | 0.03164557 |
| 390 | Daniel Nava        | ---       | 130 | 29  | 1  | 11 | 13 | 0.223 | 0.297 | 0.292 | 0.59  | 44.20% | 0.08461538 | 0.1        | 0.00769231 |
| 391 | Joey Wendle        | Athletics | 96  | 25  | 1  | 11 | 11 | 0.26  | 0.298 | 0.302 | 0.6   | 50.00% | 0.11458333 | 0.11458333 | 0.01041667 |
| 392 | Danny Santana      | Twins     | 233 | 56  | 2  | 29 | 14 | 0.24  | 0.279 | 0.326 | 0.606 | 52.40% | 0.12446352 | 0.06008584 | 0.00858369 |
| 393 | Miguel Rojas       | Marlins   | 194 | 48  | 1  | 27 | 14 | 0.247 | 0.288 | 0.325 | 0.613 | 49.60% | 0.13917526 | 0.07216495 | 0.00515464 |
| 394 | Chris Gimenez      | Indians   | 139 | 30  | 4  | 17 | 11 | 0.216 | 0.272 | 0.331 | 0.602 | 46.60% | 0.12230216 | 0.07913669 | 0.02877698 |
| 395 | Alexei Ramirez     | ---       | 478 | 115 | 6  | 38 | 48 | 0.241 | 0.277 | 0.333 | 0.61  | 48.80% | 0.07949791 | 0.10041841 | 0.0125523  |
| 396 | Christian Colon    | Royals    | 147 | 34  | 1  | 13 | 13 | 0.231 | 0.294 | 0.293 | 0.586 | 44.00% | 0.08843537 | 0.08843537 | 0.00680272 |
| 397 | Max Muncy          | Athletics | 113 | 21  | 2  | 13 | 8  | 0.186 | 0.308 | 0.257 | 0.565 | 35.70% | 0.11504425 | 0.07079646 | 0.01769912 |
| 398 | Jeff Mathis        | Marlins   | 126 | 30  | 2  | 12 | 15 | 0.238 | 0.267 | 0.333 | 0.601 | 51.70% | 0.0952381  | 0.11904762 | 0.01587302 |
| 399 | Delino DeShields   | Rangers   | 182 | 38  | 4  | 36 | 13 | 0.209 | 0.275 | 0.313 | 0.588 | 41.10% | 0.1978022  | 0.07142857 | 0.02197802 |
| 400 | Roberto Perez      | Indians   | 153 | 28  | 3  | 14 | 17 | 0.183 | 0.285 | 0.294 | 0.579 | 39.20% | 0.09150327 | 0.11111111 | 0.01960784 |



Chart 13

|     |                    |              |     |     |    |    |    |       |       |       |       |        |            |            |            |
|-----|--------------------|--------------|-----|-----|----|----|----|-------|-------|-------|-------|--------|------------|------------|------------|
| 401 | Omar Infante       | Royals       | 134 | 32  | 0  | 16 | 11 | 0.239 | 0.279 | 0.321 | 0.6   | 47.70% | 0.11940299 | 0.08208955 | 0          |
| 402 | Luke Maile         | Rays         | 119 | 27  | 3  | 10 | 15 | 0.227 | 0.252 | 0.361 | 0.613 | 47.90% | 0.08403361 | 0.12605042 | 0.02521008 |
| 403 | Alex Rodriguez     | Yankees      | 225 | 45  | 9  | 19 | 31 | 0.2   | 0.247 | 0.351 | 0.598 | 49.10% | 0.08444444 | 0.13777778 | 0.04       |
| 404 | Dioner Navarro     | ---          | 304 | 63  | 6  | 26 | 35 | 0.207 | 0.265 | 0.322 | 0.587 | 45.00% | 0.08552632 | 0.11513158 | 0.01973684 |
| 405 | Christian Vazquez  | Red Sox      | 172 | 39  | 1  | 21 | 12 | 0.227 | 0.277 | 0.308 | 0.585 | 47.40% | 0.12209302 | 0.06976744 | 0.00581395 |
| 406 | Jake Marisnick     | Astros       | 287 | 60  | 5  | 40 | 21 | 0.209 | 0.257 | 0.331 | 0.588 | 52.30% | 0.13937282 | 0.07317073 | 0.0174216  |
| 407 | Rafael Ortega      | Angels       | 185 | 43  | 1  | 24 | 16 | 0.232 | 0.283 | 0.292 | 0.575 | 46.10% | 0.12972973 | 0.08648649 | 0.00540541 |
| 408 | Juan Uribe         | Indians      | 238 | 49  | 7  | 19 | 25 | 0.206 | 0.259 | 0.332 | 0.591 | 53.10% | 0.07983193 | 0.10504202 | 0.02941176 |
| 409 | Adeiny Hechavarria | Marlins      | 508 | 120 | 3  | 52 | 38 | 0.236 | 0.283 | 0.311 | 0.594 | 50.20% | 0.1023622  | 0.07480315 | 0.00590551 |
| 410 | Kevin Plawecki     | Mets         | 132 | 26  | 1  | 6  | 11 | 0.197 | 0.298 | 0.265 | 0.563 | 47.50% | 0.04545455 | 0.08333333 | 0.00757576 |
| 411 | Hank Conger        | Rays         | 124 | 24  | 3  | 6  | 10 | 0.194 | 0.265 | 0.306 | 0.571 | 48.20% | 0.0483871  | 0.08064516 | 0.02419355 |
| 412 | Carlos Sanchez     | White Sox    | 154 | 32  | 4  | 15 | 21 | 0.208 | 0.236 | 0.357 | 0.593 | 49.30% | 0.0974026  | 0.13636364 | 0.02597403 |
| 413 | Cliff Pennington   | Angels       | 172 | 36  | 3  | 18 | 10 | 0.209 | 0.265 | 0.308 | 0.573 | 49.30% | 0.10465116 | 0.05813953 | 0.01744186 |
| 414 | Michael Martinez   | ---          | 101 | 24  | 1  | 16 | 4  | 0.238 | 0.267 | 0.307 | 0.574 | 54.60% | 0.15841584 | 0.03960396 | 0.00990099 |
| 415 | Derek Norris       | Padres       | 415 | 77  | 14 | 50 | 42 | 0.186 | 0.255 | 0.328 | 0.583 | 44.90% | 0.12048193 | 0.10120482 | 0.03373494 |
| 416 | Ramon Flores       | Brewers      | 249 | 51  | 2  | 18 | 19 | 0.205 | 0.294 | 0.261 | 0.555 | 42.70% | 0.07228916 | 0.07630522 | 0.00803213 |
| 417 | Alexi Amarista     | Padres       | 140 | 36  | 0  | 9  | 11 | 0.257 | 0.295 | 0.271 | 0.567 | 45.90% | 0.06428571 | 0.07857143 | 0          |
| 418 | Alex Presley       | ---          | 121 | 24  | 3  | 12 | 11 | 0.198 | 0.269 | 0.289 | 0.558 | 45.90% | 0.09917355 | 0.09090909 | 0.02479339 |
| 419 | Brandon Barnes     | Rockies      | 100 | 22  | 0  | 10 | 8  | 0.22  | 0.25  | 0.32  | 0.57  | 55.40% | 0.1        | 0.08       | 0          |
| 420 | Billy Burns        | ---          | 311 | 73  | 0  | 39 | 13 | 0.235 | 0.271 | 0.296 | 0.566 | 51.50% | 0.12540193 | 0.04180064 | 0          |
| 421 | Carlos Perez       | Angels       | 268 | 56  | 5  | 25 | 31 | 0.209 | 0.244 | 0.325 | 0.568 | 46.40% | 0.09328358 | 0.11567164 | 0.01865672 |
| 422 | Ben Revere         | Nationals    | 350 | 76  | 2  | 44 | 24 | 0.217 | 0.26  | 0.3   | 0.56  | 38.70% | 0.12571429 | 0.06857143 | 0.00571429 |
| 423 | Nick Ahmed         | Diamondbacks | 284 | 62  | 4  | 26 | 20 | 0.218 | 0.265 | 0.299 | 0.564 | 52.00% | 0.0915493  | 0.07042254 | 0.01408451 |
| 424 | A.J. Reed          | Astros       | 122 | 20  | 3  | 11 | 8  | 0.164 | 0.27  | 0.262 | 0.532 | 43.40% | 0.09016393 | 0.06557377 | 0.02459016 |
| 425 | Tyler Goeddel      | Phillies     | 213 | 41  | 4  | 17 | 16 | 0.192 | 0.258 | 0.291 | 0.549 | 45.20% | 0.07981221 | 0.07511737 | 0.01877934 |
| 426 | J.B. Shuck         | White Sox    | 224 | 46  | 4  | 27 | 14 | 0.205 | 0.248 | 0.299 | 0.547 | 45.70% | 0.12053571 | 0.0625     | 0.01785714 |
| 427 | Preston Tucker     | Astros       | 134 | 22  | 4  | 11 | 8  | 0.164 | 0.222 | 0.328 | 0.551 | 49.20% | 0.08208955 | 0.05970149 | 0.02985075 |
| 428 | Mike Aviles        | Tigers       | 167 | 35  | 1  | 17 | 6  | 0.21  | 0.258 | 0.269 | 0.528 | 46.20% | 0.10179641 | 0.03592814 | 0.00598802 |
| 429 | A.J. Pierzynski    | Braves       | 247 | 54  | 2  | 15 | 23 | 0.219 | 0.243 | 0.304 | 0.547 | 58.90% | 0.06072874 | 0.09311741 | 0.00809717 |
| 430 | Ryan Goins         | Blue Jays    | 183 | 34  | 3  | 13 | 12 | 0.186 | 0.228 | 0.306 | 0.534 | 45.70% | 0.07103825 | 0.06557377 | 0.01639344 |
| 431 | Mikie Mahtook      | Rays         | 185 | 36  | 3  | 16 | 11 | 0.195 | 0.231 | 0.292 | 0.523 | 46.60% | 0.08648649 | 0.05945946 | 0.01621622 |
| 432 | Shane Robinson     | Angels       | 98  | 17  | 1  | 16 | 10 | 0.173 | 0.257 | 0.235 | 0.492 | 43.40% | 0.16326531 | 0.10204082 | 0.01020408 |
| 433 | Raul Mondesi       | Royals       | 135 | 25  | 2  | 16 | 13 | 0.185 | 0.231 | 0.281 | 0.512 | 53.50% | 0.11851852 | 0.0962963  | 0.01481481 |
| 434 | Yan Gomes          | Indians      | 251 | 42  | 9  | 22 | 34 | 0.167 | 0.201 | 0.327 | 0.527 | 57.00% | 0.0876494  | 0.13545817 | 0.03585657 |
| 435 | Josh Thole         | Blue Jays    | 118 | 20  | 1  | 7  | 7  | 0.169 | 0.254 | 0.22  | 0.474 | 43.40% | 0.05932203 | 0.05932203 | 0.00847458 |
| 436 | Ryan Hanigan       | Red Sox      | 105 | 18  | 1  | 9  | 14 | 0.171 | 0.23  | 0.238 | 0.468 | 43.60% | 0.08571429 | 0.13333333 | 0.00952381 |
| 437 | Daniel Castro      | Braves       | 130 | 26  | 0  | 8  | 7  | 0.2   | 0.241 | 0.208 | 0.449 | 50.60% | 0.06153846 | 0.05384615 | 0          |
| 438 | Caleb Joseph       | Orioles      | 132 | 23  | 0  | 7  | 0  | 0.174 | 0.216 | 0.197 | 0.413 | 49.20% | 0.0530303  | 0          | 0          |

0.06041244 0.02764474 -0.0439098 0.04765549 0.11528356 -0.3269806 0.06295872 -0.073542 1 -0.1935549 0.04267815 -0.0221554

AB H HR R RBI AVG OBP SLG OPS Swing% R/AB RBI/AB HR/AB

Chart 14

|        | Aggressive 2016 |       | Aggressive Career |         | Selective 2016       |        | Selective Career |         |
|--------|-----------------|-------|-------------------|---------|----------------------|--------|------------------|---------|
|        | mean            | sd    | mean              | sd      | mean                 | sd     | mean             | sd      |
| H      | 154.1           | 22.87 | 811.082           | 643.374 | 146.694              | 26.104 | 947.449          | 501.783 |
| HR     | 23.31           | 10.58 | 105.408           | 101.752 | 21.286               | 10.54  | 124.224          | 101.83  |
| RBI    | 78.65           | 19.5  | 403.837           | 354.839 | 75.102               | 22.792 | 467.857          | 308.36  |
| SB     | 7.78            | 10.57 | 56.755            | 68.534  | 10.673               | 11.226 | 72.857           | 56.497  |
| AVG    | 0.275           | 0.025 | 0.273             | 0.021   | 0.27                 | 0.03   | 0.273            | 0.019   |
| OBP    | 0.327           | 0.03  | 0.327             | 0.027   | 0.354                | 0.032  | 0.35             | 0.024   |
| SLG    | 0.464           | 0.06  | 0.447             | 0.053   | 0.453                | 0.062  | 0.442            | 0.049   |
| OPS    | 0.792           | 0.083 | 0.774             | 0.074   | 0.806                | 0.086  | 0.793            | 0.066   |
| RBI/AB | 0.14            | 0.027 | 0.134             | 0.028   | 0.138                | 0.036  | 0.13             | 0.03    |
| R      | 75.286          | 17.24 | 396.918           | 324.649 | 83.204               | 16.626 | 521.735          | 286.478 |
| HR/AB  | 0.041           | 0.017 | 0.036             | 0.014   | 0.039                | 0.018  | 0.034            | 0.016   |
| R/AB   | 0.134           | 0.023 | 0.133             | 0.02    | 0.153                | 0.023  | 0.149            | 0.019   |
|        | z values        |       | p values          |         | Significant? (p<.05) |        |                  |         |
| 2016   |                 |       |                   |         |                      |        |                  |         |
| H      | 1.50894459      |       | 0.131324          |         |                      |        |                  |         |
| HR     | 0.95833161      |       | 0.337912          |         |                      |        |                  |         |
| RBI    | 0.83639929      |       | 0.402986          |         |                      |        |                  |         |
| SB     | -1.326707       |       | 0.18484           |         |                      |        |                  |         |
| AVG    | 0.90535746      |       | 0.365306          |         |                      |        |                  |         |
| OBP    | -4.3525747      |       | 0.000013          | yes     |                      |        |                  |         |
| SLG    | 0.90151821      |       | 0.367323          |         |                      |        |                  |         |
| OPS    | -0.8282719      |       | 0.40767           |         |                      |        |                  |         |
| RBI/AB | 0.31426968      |       | 0.753369          |         |                      |        |                  |         |
| R      | -2.337654       |       | 0.019439          | yes     |                      |        |                  |         |
| HR/AB  | 0.57119548      |       | 0.567932          |         |                      |        |                  |         |
| R/AB   | -4.1304348      |       | 0.000036          | yes     |                      |        |                  |         |
| Career |                 |       |                   |         |                      |        |                  |         |
| H      | -1.1818155      |       | 0.237603          |         |                      |        |                  |         |
| HR     | -0.9242467      |       | 0.355486          |         |                      |        |                  |         |
| RBI    | -0.9629592      |       | 0.33605           |         |                      |        |                  |         |
| SB     | -1.2819137      |       | 0.200194          |         |                      |        |                  |         |
| AVG    | 0               |       | 1                 |         |                      |        |                  |         |
| OBP    | -4.5020217      |       | <.00001           | yes     |                      |        |                  |         |
| SLG    | 0.48981958      |       | 0.62427           |         |                      |        |                  |         |
| OPS    | -1.3549325      |       | 0.175736          |         |                      |        |                  |         |
| RBI/AB | 0.68924552      |       | 0.490697          |         |                      |        |                  |         |
| R      | -2.0384345      |       | 0.04155           | yes     |                      |        |                  |         |
| HR/AB  | 0.66519011      |       | 0.505987          |         |                      |        |                  |         |
| R/AB   | -4.1012161      |       | 0.000041          | yes     |                      |        |                  |         |

Figure 1

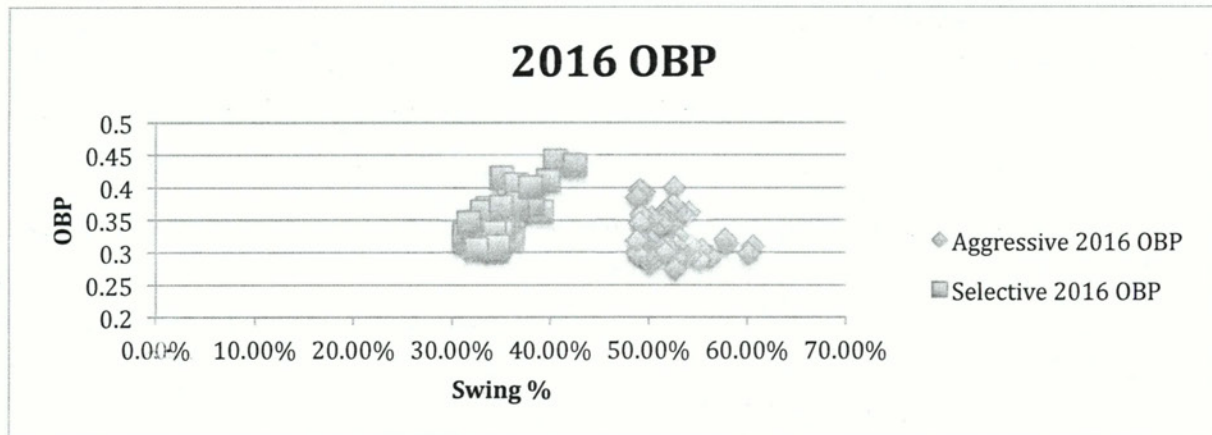


Figure 2

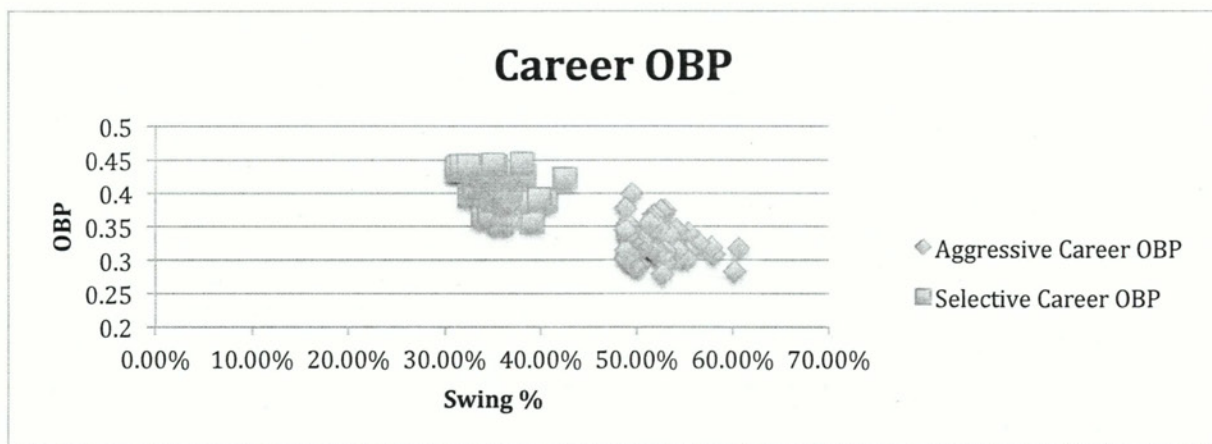


Figure 3

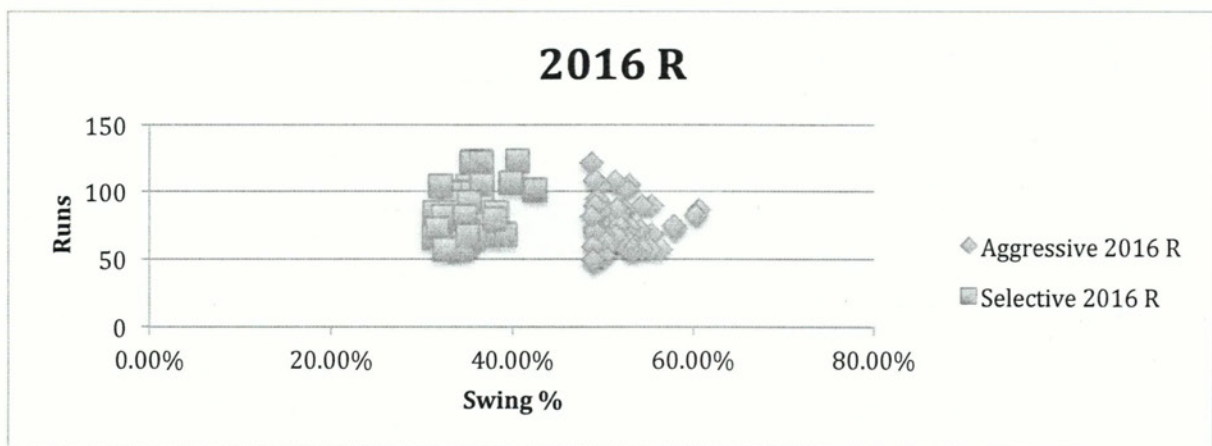




Figure 4

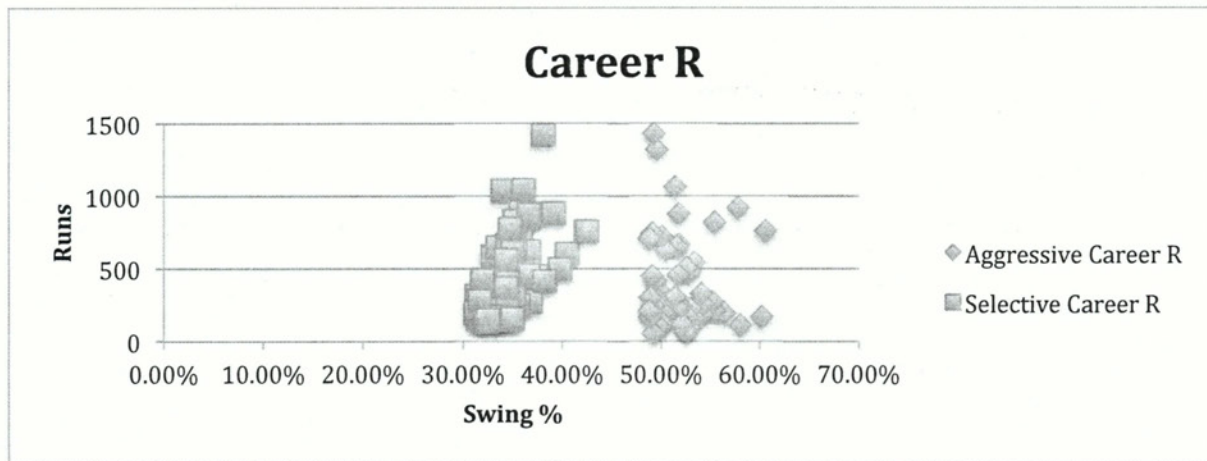


Figure 5

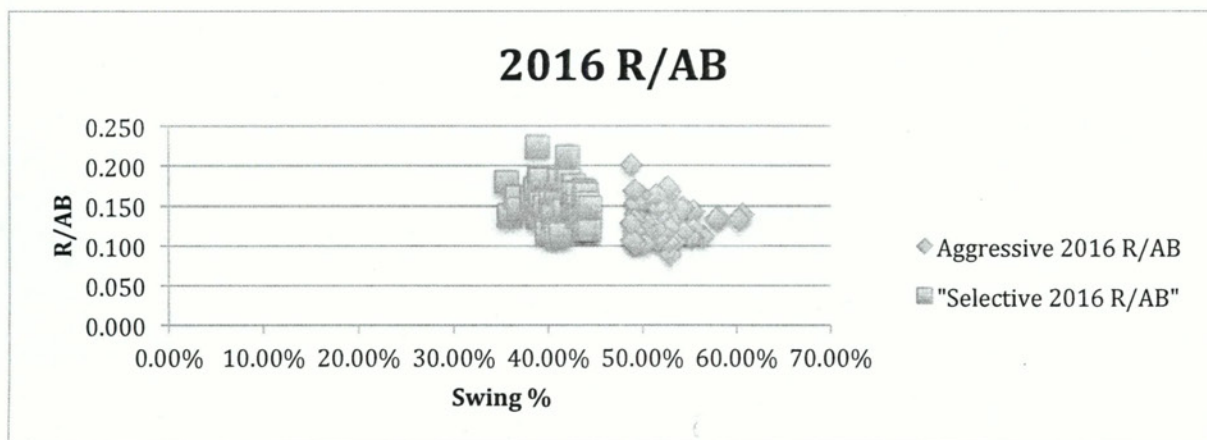


Figure 6

